

A MONOGRAPH OF PAPUAN PSYCHODIDAE, INCLUDING PHLEBOTOMUS (DIPTERA)*

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Abstract: 228 species of Psychodidae are described and illustrated; keys are provided for all species, subgenera and genera. The genera and the number of species treated are: *Phlebotomus* (*Australophlebotomus*), 2 species, 1 new; *P. (Sergentomyia)*, 16, 8 new; *Sycorax*, no species described; *Trichomyia*, 5 new; *Pericoma*, 3 new; *Notiocharis*, 9, 8 new; *Paratelmatocephalus*, 4 new; *Telmatocephalus* (*Nototelmatocephalus*), 20 new; *T. (Eutelmatocephalus)*, 11 new; *T. (Clogmia)*, 14, 13 new; *T. (Rhadinoscopus)*, 10 new; *T. (Oreoscopus)*, 7 new; *Gerobrunettia*, 4 new; *Brunettia*, 18 new; *Atrichobrunettia*, 10 new; *Trichopsychoda*, 4 new; *Epacreton*, 3 new; *Philosepedon*, 7, 6 new; *Threticus*, 1 new; *Psychoda*, 80, 55 new. *Gerobrunettia*, *Telmatocephalus* (*Rhadinoscopus*) and *T. (Oreoscopus)* are new higher taxa. Affinities of Papuan psychodids are divided between Asia and Australia.

Undertaking a study of Psychodidae of the Papuan subregion is entering virgin territory. No other psychodid fauna has been so neglected. While the faunas of many other regions are poorly known, in none was our knowledge of the psychodids so meager. The only publication which dealt with these small flies was a single paper on *Phlebotomus* by Fairchild (1952), which was based on small collections made during World War II largely by U.S. Army personnel of the 5th Malaria Survey Unit.

Since that time, large collections of insects have been made in New Guinea and we have had available some 20,000 specimens of psychodids. These have provided a significant insight into the Papuan psychodids and have increased the number of species from a mere 9 to 228. Yet, we feel this is but a small part of the total and would hazard the guess that even now no more than 25% of the psychodids are known.

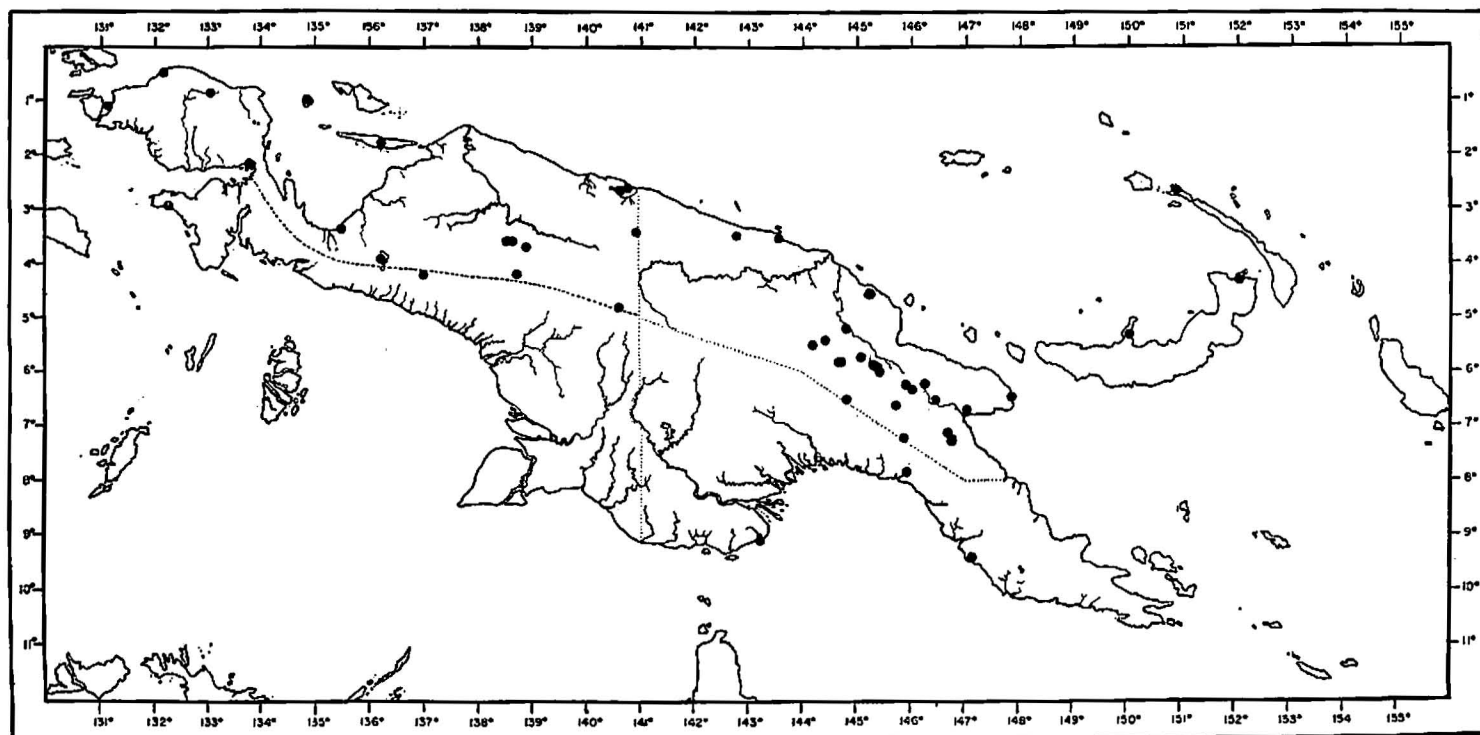
The material we studied has come chiefly from New Guinea, but a little also from New Britain and New Ireland. Map 1 indicates the localities at which psychodids have been collected and the following list gives the locations, dates and collectors.

Localities at which Psychodidae have been collected in the Papuan subregion

S.Lat. & E. Long.	NW New Guinea
3°41' 138°53'	Archbold L, XI. XII. 1961, 760 m, L. & S. Quate.
4°12' 138°41'	Baliem Val, Wamena, II. 1960, T.C. Maa.
2°10' 132°56'	Biak I., VII. 1957, D.E. Hardy; VI. 1959, Maa.
3°38' 138°40'	Bokondini, ca 40 km N of Baliem Val, XI. 1961, 1300 m, L. & S. Quate.
2°32' 140°42'	Hollandia & Hollandia-Binnen, IX. 1944, I. 1945; 1958, J.L. Gressitt; 1959, Maa; 1961, L. & S. Quate.
1°45' 136°15'	Japen I., 17 km E of Sumberbaba, Kanyon Batu, IX. 1962, N. Wilson.
1°08' 131°14'	Jef Lio I., VII. 1957, Hardy.

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Map 1. Papuan localities in which Psychodidae have been collected.

S. Lat. & E. Long.

0°28'	132°06'	Kebar Val., Vogelkop, 4-31. I.1962, 550 m, L. & S. Quate.
2°36'	140°39'	Kota Nica, near Hollandia, X. 1961, L. & S. Quate.
0°52'	133°05'	Manokwari, VII. 1957, Hardy; II. 1962, L. & S. Quate.
4°12'	137°00'	Mulik R, 10 km W of Archbold L, XII.1961, 1050 m, L. & S. Quate.
3°22'	135°29'	Nabire, S of Geelvink Bay, VII.1962, Gressitt & J. Sedlacek.
1°03'	134°54'	Noemfor I., IX. 1944, Ferguson & Graham.
1°34'	134°11'	Ransiki, Vogelkop, VIII.1957, Hardy.
0°28'	132°06'	Sansapor, IX.1944.
1°51'	138°45'	Sarmi, VII. 1959, Maa.
4°50'	140°35'	Star Mts, Sibil Val, X.XI.1961, 1245 m, L. & S. Quate.
3°35'	138°30'	Swart Val, Karubaka, XI. 1958, 1450 m, Gressitt.
1°59'	139°00'	Toem (W of Hollandia), IX.1944.
3°30'	140°55'	Waris, S of Hollandia, VIII.1959, Maa.
3°55'	136°15'	Wissel Lakes, VIII.1955, Gressitt; VII, VIII.1962, Wilson.
<i>SW New Guinea</i>		
2°55'	132°18'	Fak Fak, Bombarai, VI.1959, Maa & Gressitt.
<i>NE New Guinea¹</i>		
5°13'	145°35'	Baitabag, 14 km W of Madang, XII.1964, W.A. Steffan.
5°35'	144°10'	Baiyer R, Western Highlands Distr, X.1958, 1150 m, Gressitt.
5°52'	144°40'	Banz, Waghi Val, VII. 1955, Gressitt.
5°55'	145°18'	Daulo Pass, Eastern Highlands Distr, VII.1957, Hardy.
3°34'	142°44'	Dreikikir, Sepik Distr, VI.1961, J.L. & M. Gressitt.
6°34'	147°51'	Finschhafen, Morobe Distr, VIII.1944.
6°01'	145°23'	Kabebe, Mt Otto, E Highlands Distr, VI.1955, Gressitt.
6°18'	146°15'	Kainantu, E Highlands Distr, X.1959, 1650 m, Maa.
6°15'	144°30'	Kaindi, Morobe Distr, V.1959, 2050 m, 6th Archb. Exped.
6°32'	144°47'	Karimui, S of Goroka, E Highlands Distr, VI.1961, Gressitt.
5°45'	144°25'	Karap, N of Jimmi-Waghi Divide, W Highlands Distr, VII.1955, Gressitt.
6°18'	145°52'	Kassam, 48 km E of Kainantu, XI. 1959, Maa.
6°30'	146°00'	Kratke Mts, Morobe Distr, X.XI.1959, 1400 m, 6th Archb. Exped.
4°55'	144°43'	Kundiawa, E Highlands Distr, I. 1965, Steffan.
6°43'	147°00'	Lae, Morobe Distr, VII.1957, Hardy.
6°43'	147°00'	Lae-Bulolo Rd, 37 km W of Lae, IV.1959, 100 m 6th Archb. Exped.
5°13'	144°49'	Madang, XI.1964, Steffan & Y.M. Huang.
3°35'	143°02'	Maprik, Sepik Distr, VIII.1957, Hardy.
6°35'	146°25'	Markham Val, Umi R, Morobe Distr, XI.1959, 480 m, 6th Archb. Exped.
5°53'	144°39'	Minj, W Highlands Distr, VI.1957, Hardy; V.1959, W. Peters.
5°52'	144°12'	Mt Hagen, Tomba, W Highlands Distr, V.1963, Sedlacek.
6°28'	145°17'	Mt Michael, NE slopes, Kimi Creek Camp, E Highlands Distr, VIII.1959, 1980 m, 6th Archb. Exped.
6°00'	145°22'	Mt Otto, E slopes, Kotoni, Madang Distr, VIII.1959, 2200 m, 6th Archb. Exped.
6°00'	145°22'	Mt Otto, S slopes, 24.VI.1955, 2200 m, Gressitt.
5°44'	145°04'	Mt Wilhelm, Aunde & Toromomburo, E Highlands Distr, VI.1955, Gressitt.
5°45'	144°55'	Mt Wilhelm, E slopes, Pengagl Camp, E Highlands Distr, IX.1959, 2770 m, 6th Archb. Exped.
5°52'	144°43'	Nondugl, W Highlands Distr, VII.1955, Gressitt.

¹Collecting localities partly described and mapped by Brass (1964).

<i>S. Lat. & E. Long</i>		
6°32'	145°41'	Okapa area, Purosa Camp, E Highlands Distr, IX.1959, 1950 m, 6th Archb. Exped.
3°21'	142°27'	Torricelli Mts, Mobitei, II.III.1959, W.W. Brandt.
5°53'	144°55'	Tsigmil, 24 km E of Minj, VI.1957, Hardy.
6°01'	144°56'	Upper Chimbu Val, Numbu, VII.1955, Gressitt.
5°25'	144°23'	Upper Jimmi Val, Wum, Tsenga & Korop, VII.VIII.1955, Gressitt.
7°20'	146°43'	Wampit R Val, 75 km from Lae, Morobe Distr, VII.1957, Hardy; V.1959, 6th Archb. Exped.
7°20'	146°43'	Wau, Morobe Distr, XII.1961, Sedlacek, L. & S. Quate; III.1965, Steffan.
3°33'	143°38'	Wewak, Sepik Distr, X.1957, Gressitt.
4°30'	146°04'	Adelbert Mts, Wanuma, X.1958, Gressitt.
<i>Papua</i>		
6°02'	143°51'	Dimifa, nr Mt Giluwe, S Highlands Distr, X.1958, Gressitt.
8°48'	148°18'	Dobadura, Oro Bay, VIII.1944.
7°50'	145°52'	Murua, XII.1964, Steffan.
9°27'	147°09'	Port Moresby
<i>New Britain</i>		
4°24'	152°02'	Gazelle Pen, Keravat, VI.1959, Peters; VIII.1960, Smec.
5°20'	150°00'	Linga Linga Pl'n, W of Willaumez Pen, IV.1956, Gressitt.
4°38'	152°00'	Mt Sinewit, Gazelle Pen, XI.1962, Sedlacek.
5°20'	152°08'	Vunabaken, 10 km E of Keravat.
<i>New Ireland</i>		
2°40'	150°50'	Kavieng, VI.1959, Peters.
<i>Solomon Islands</i>		
5°40'	155°10'	Inis (Inus Pt. ?), Bougainville I, V. 1959, Peters.

The specimens which we have utilized in this work are largely from the collections of the Bishop Museum made during various expeditions to New Guinea. A large amount of material also came from the American Museum of Natural History, which was collected during the 6th Archbold Expedition to New Guinea in 1959. Most of the primary types of the new species will be deposited at the Bishop Museum, abbreviated "Bishop" in the citations; and paratypes, where possible, deposited at the U.S. National Museum, Washington, D.C., "USNM"; American Museum of Natural History, New York, "AMNH"; British Museum (Natural History), London, "BMNH"; and Australian National Insect Collection, Commonwealth Scientific and Industrial Research Organization, Canberra, Australia, "CSIRO". Some *Phlebotomus* types are located at the School of Public Health and Tropical Hygiene, The University of Sydney, Australia (SPHTM).

In most of the descriptions, the ratio of the fore femur: tibia is cited; the measurement of the femur includes the trochanter. The wings were measured from the base of the primary costal node. Where more than 10 specimens are suitable for measuring, the mean and range are cited; when less than 10 only the range is cited. In some instances, wings were measurable on enough specimens to calculate the mean, but some of the antennae were broken and only the range is given. In *Phlebotomus* descriptions, the ratio of wing units is the relative lengths of R_{2+3} (beta), R_2 (alpha) and R_1 overlap (delta).

All drawings, but heads and wings, were made with the aid of the camera lucida; heads and wings were drawn from the image projected by a microprojector. All new species are illustrated, as well as known species in instances where we felt existing illustrations were inadequate.

Acknowledgements. At the time we did our fieldwork, West New Guinea was under Dutch administration. Dr R.T. Simon Thomas, Government Entomologist, made most of the official arrangements to permit us to work at some of the interior stations and collect nearly all the specimens studied from West New Guinea. We are particularly indebted to both Dr & Mrs Simon Thomas for their generous assistance and kind hospitality and to other Dutch officials for their cooperation.

For their diligence and effort in collecting many of the tiny psychodids, we are grateful to Mr L.J. Brass and other members of the 6th Archbold Expedition and to our colleagues at the Bishop Museum. The collections made by Drs W.A. Steffan and Nixon Wilson were especially important to us.

Most of the illustrations were made by the junior author, but many were also done by Mrs Donna Ryan and Miss Esther Sugai. The meticulous drawings of the *Phlebotomus cibaria* by Mrs Ryan are especially appreciated.

LIST OF PAPUAN PSYCHODIDAE

- | | |
|--|--|
| <i>Phlebotomus</i> (<i>Australophlebotomus</i>) Theodor | <i>Notiocharis</i> Eaton |
| 1. <i>papuensis</i> Fairchild | 27. <i>maai</i> n. sp. |
| 2. <i>trifilis</i> n. sp. | 28. <i>fragilis</i> n. sp. |
| <i>Phlebotomus</i> (<i>Sergentomyia</i>) França & Parrot | 29. <i>miranda</i> n. sp. |
| 3. <i>sibylas</i> n. sp. | 30. <i>lanceolata</i> n. sp. |
| 4. <i>coronatus</i> n. sp. | 31. <i>assimilis</i> n. sp. |
| 5. <i>englishi moresbyi</i> Fairchild | 32. <i>papuensis</i> n. sp. |
| 6. <i>spinosior</i> n. sp. | 33. <i>stellae</i> Quate |
| 7. <i>hoogstraali</i> Fairchild | 34. <i>phlyctis</i> n. sp. |
| 8. <i>vanellus</i> n. sp. | 35. <i>paxillosa</i> n. sp. |
| 9. <i>cidarius</i> n. sp. | <i>Paratelmatoscopus</i> Satchell |
| 10. <i>brachycornutus</i> Fairchild | 36. <i>permistus</i> n. sp. |
| 11. <i>dolichobysus</i> Fairchild | 37. <i>nitidus</i> n. sp. |
| 12. <i>cryptus</i> n. sp. | 38. <i>impigrus</i> n. sp. |
| 13. <i>curtartus</i> n. sp. | 39. <i>similis</i> n. sp. |
| 14. <i>fergusoni</i> Fairchild | <i>Telmatoscopus</i> (<i>Nototelmatoscopus</i>) Satchell |
| 15. <i>kebarica</i> n. sp. | 40. <i>centraceps</i> n. sp. |
| 16. <i>sansaporensis</i> Fairchild | 41. <i>reburus</i> n. sp. |
| 17. <i>noemforensis</i> Fairchild | 42. <i>agrestis</i> n. sp. |
| 18. <i>quintus</i> Fairchild | 43. <i>lippus</i> n. sp. |
| <i>Sycorax</i> Curtis | 44. <i>tridentatus</i> n. sp. |
| <i>Trichomyia</i> Curtis | 45. <i>lobellus</i> n. sp. |
| 19. <i>furtiva</i> n. sp. | 46. <i>castaneus</i> n. sp. |
| 20. <i>noctivolata</i> n. sp. | 47. <i>scarificatus</i> n. sp. |
| 21. <i>trivialis</i> n. sp. | 48. <i>cracentus</i> n. sp. |
| 22. <i>falcata</i> n. sp. | 49. <i>confragus</i> n. sp. |
| 23. <i>singularis</i> n. sp. | 50. <i>appendiculatus</i> n. sp. |
| <i>Pericoma</i> Walker | 51. <i>fragilis</i> n. sp. |
| 24. <i>steffani</i> n. sp. | 52. <i>bulbulus</i> n. sp. |
| 25. <i>agrestis</i> n. sp. | 53. <i>sisyphus</i> n. sp. |
| 26. <i>peregrina</i> n. sp. | 54. <i>longicerus</i> n. sp. |

55. *hirsutus* n. sp.
 56. *repandus* n. sp.
 57. *baitabagensis* n. sp.
 58. *empheres* n. sp.
 59. *obtusulatus* n. sp.
- Telmatoscopus* (*Eutelmatoscopus*) Satchell
60. *syncretus* n. sp.
 61. *huangae* n. sp.
 62. *panergus* n. sp.
 63. *decussatus* n. sp.
 64. *crenigus* n. sp.
 65. *acrobeles* n. sp.
 66. *oxybeles* n. sp.
 67. *stellatus* n. sp.
 68. *steffani* n. sp.
 69. *mergellatus* n. sp.
 70. *tersaceps* n. sp.
- Telmatoscopus* (*Clogmia*) Enderlein
71. *albipunctatus* (Williston)
 72. *contortulus* n. sp.
 73. *membragus* n. sp.
 74. *convolvulus* n. sp.
 75. *fissurellus* n. sp.
 76. *flebilis* n. sp.
 77. *zeus* n. sp.
 78. *batillinus* n. sp.
 79. *colobrinus* n. sp.
 80. *aurigeneus* n. sp.
 81. *gratus* n. sp.
 82. *volvistylus* n. sp.
 83. *falcatus* n. sp.
 84. *consentaneus* n. sp.
- Telmatoscopus* (*Rhadinoscopus*), n. subgen.
85. *paniscus* n. sp.
 86. *hemedopos* n. sp.
 87. *gerrulus* n. sp.
 88. *aristosus* n. sp.
 89. *paniscoides* n. sp.
 90. *insignis* n. sp.
 91. *ignavus* n. sp.
 92. *tubanus* n. sp.
 93. *fratuelis* n. sp.
 94. *egregius* n. sp.
- Telmatoscopus* (*Oreoscopus*), n. subgen.
95. *wauensis* n. sp.
 96. *adustus* n. sp.
97. *zygops* n. sp.
 98. *globalaris* n. sp.
 99. *kratkensis* n. sp.
 100. *spurius* n. sp.
 101. *ambalatus* n. sp.
- Gerobrunettia*, n. gen.
102. *geminata* n. sp.
 103. *sibilensis* n. sp.
 104. *kagora* n. sp.
 105. *filamentosa* n. sp.
- Brunettia* Annandale
106. *onerata* n. sp.
 107. *anfracta* n. sp.
 108. *goliath* n. sp.
 109. *cyclops* n. sp.
 110. *grossipenna* n. sp.
 111. *jeffiensis* n. sp.
 112. *sedlacekiae* n. sp.
 113. *pumilis* n. sp.
 114. *phainops* n. sp.
 115. *iota* n. sp.
 116. *sinuosa* n. sp.
 117. *remostyla* n. sp.
 118. *exigua* n. sp.
 119. *chydaea* n. sp.
 120. *orbicularis* n. sp.
 121. *longiscapa* n. sp.
 122. *palmata* n. sp.
 123. *tenuistyla* n. sp.
- Atrichobrunettia* Satchell
124. *bisulca* n. sp.
 125. *bisulcoides* n. sp.
 126. *solita* n. sp.
 127. *antennata* n. sp.
 128. *spadix* n. sp.
 129. *pallescent* n. sp.
 130. *clavigera* n. sp.
 131. *lyrata* n. sp.
 132. *microps* n. sp.
 133. *tribulosa* n. sp.
- Trichopsychoda* Tonnoir
134. *spicata* n. sp.
 135. *clavata* n. sp.
 136. *binodata* n. sp.
 137. *pollex* n. sp.

Epacreton Quate

- 138. insolitum n. sp.
- 139. anacris n. sp.
- 140. breviceps n. sp.

Philosepedon Eaton

- 141. tineiformis (Edwards)
- 142. torosa n. sp.
- 143. pectinata n. sp.
- 144. quadricuspis n. sp.
- 145. sessilis n. sp.
- 146. forcipata n. sp.
- 147. setosa n. sp.

Threticus Eaton

- 148. fissiceps n. sp.

Psychoda Latreille

- 149. adumbrata Satchell
- 150. sibilica n. sp.
- 151. furcillata n. sp.
- 152. plutea n. sp.
- 153. spicula n. sp.
- 154. paraloba n. sp.
- 155. remata n. sp.
- 156. ochra Quate
- 157. albescens n. sp.
- 158. oculata n. sp.
- 159. wilsoni n. sp.
- 160. mirabilis n. sp.
- 161. rhinocera n. sp.
- 162. monticola n. sp.
- 163. alveata n. sp.
- 164. rosetta n. sp.
- 165. harrisi Satchell
- 166. macispina n. sp.
- 167. crenula Quate
- 168. spinipeltata n. sp.
- 169. dissidens n. sp.
- 170. gemella n. sp.
- 171. kalabanica Quate
- 172. paraguadens n. sp.
- 173. cetreta n. sp.
- 174. sectiga n. sp.
- 175. tumorosa n. sp.
- 176. aponesos Quate
- 177. spinacia n. sp.
- 178. echinata n. sp.
- 179. vesca n. sp.
- 180. concinna n. sp.
- 181. hastata n. sp.
- 182. serpentina Quate
- 183. oculifera n. sp.
- 184. pala n. sp.
- 185. aderces Quate
- 186. paraderces Quate
- 187. savaiensis Edwards
- 188. quadrilosa n. sp.
- 189. quadropsis n. sp.
- 190. quadricornis n. sp.
- 191. guamensis Quate
- 192. quadrata n. sp.
- 193. nolana n. sp.
- 194. alia Quate
- 195. pseudalternata Williams
- 196. alternata Say
- 197. acanthostyla Tokunaga
- 198. vagabunda Quate
- 199. platilobata Tokunaga
- 200. yapensis Quate
- 201. caudata Quate
- 202. rhipsalis n. sp.
- 203. makati del Rosario
- 204. ablucens n. sp.
- 205. bitrunculens n. sp.
- 206. brassi n. sp.
- 207. floropsis n. sp.
- 208. duaspica n. sp.
- 209. mediocris Quate
- 210. absidata n. sp.
- 211. innotabilis Quate
- 212. pinguicula n. sp.
- 213. annectans n. sp.
- 214. erratilis n. sp.
- 215. lamina n. sp.
- 216. pellucida Quate
- 217. pacilens n. sp.
- 218. sphelata n. sp.
- 219. blandita n. sp.
- 220. parsivena Quate
- 221. bojata n. sp.
- 222. barbigera n. sp.
- 223. alabangensis del Rosario
- 224. gracicaulis n. sp.
- 225. spectabilis n. sp.

226. *exigua* n. sp.
 227. *debilis* n. sp.
 228. *exilis* n. sp.

KEY TO GENERA OF PAPUAN PSYCHODIDAE

1. Wing with only single longitudinal vein between radial and medial forks; eye with bridge; flagellar segments of antenna pyriform or subcylindrical but not nodiform 2
 *Trichomyiinae*..... 2
- Wing with 2 veins between forks 3
- 2 (1). Palpus 4-segmented; Cu short, ending near base of wing ***Sycorax***
 Palpus 3-segmented; Cu long, ending near center of wing ***Trichomyia***
- 3 (1). Eye hemispherical, without bridge 4
 Eye with bridge extending above antenna towards midline.....6
- 4 (3). Palpus 4-segmented; proboscis short, non-piercing; ♂ dististyle without large spines; ♀ spermathecae hemispherical, firmly fixed together and without membranous ducts *Psychodinae*..... 5
 Palpus 5-segmented; proboscis elongate and adapted to blood-sucking in ♀; ♂ dististyle with 3-5 large spines; ♀ spermathecae saccular, separated, attached to subgenital plate through membranous ducts *Phlebotominae*..... ***Phlebotomus***
- 5 (4). Radial and medial wing forks distad of Cu apex; flagellar segments of antenna spindle-shaped; antenna of ♂ 12-segmented, of ♀ 15- or 16-segmented; ♂ surstyle with multiple tenacula ***Notiocharis***
 Radial and medial forks basad of Cu apex; flagellar segments nodiform; antenna 16-segmented; ♂ surstyle with single tenaculum ***Paratelmatoscopus***
- 6 (3). Labellum flattened and bearing 3-5 blunt teeth and 1-2 spines; palpus 1 subequal to or longer than 2; terminal antennal segments beyond 3 strongly reduced 7
 Labellum usually bulbous or inflated, if flattened without blunt teeth but spines only; palpus 1 usually about 1/2 × 2 9
- 7 (6). Head not unusually broad; ♀ cercus elongate; all wing veins about equally developed..... 8
 Head broad, wider than high; ♀ cercus much reduced; veins R₁, M₁ and often R₂ strong and others faint; wing membrane with vestiture ***Epacreton***
- 8 (7). Antennal ascoids consisting of single, sinuous branch; eye bridges connected by interocular suture ***Threticus***
 Antennal ascoids Y-shaped or 4-branched; eyes seldom with interocular suture..... ***Psychoda***
- 9 (6). Wing forks complete 10
 Wing forks incomplete, i.e., R₂ and M₂ with large parts of bases lacking; wing membrane covered with vestiture; ♂ surstyle short and with many slender, bell-tipped or capitate tenacula ***Trichopsychoda***
- 10 (9). Flagellar segments nodiform 11
 Flagellar segments spindle-shaped; ♂ surstyle with single tenaculum..... ***Pericoma***
- 11 (10). Median margin of eye bridge acutely pointed or rounded, bridge narrow and almost always with only 3 rows of facets; eyes separated on midline; radial sector pectinate; ♂ surstyle short, with numerous slender tenacula bearing lamellate or striated, enlarged tips ... 12
 Median margin of bridge truncate or eyes contiguous on midline; bridge usually with 4 rows of facets 14
- 12 (11). Palpus very long, extends nearly to or beyond tip of antenna; wing broad and membrane with vestiture 13
 Palpus extends only to about center of antenna; wing slender and membrane without vestiture..... ***Atrichobrunettia***
- 13 (12). 1st flagellar segment reduced, considerably smaller than following and without internode.....

-**Gerobrunettia**
 1st flagellar segment similar in size and shape to following**Brunettia**
 14(11). Wing forks well removed from base; Rs usually not pectinate; wing membrane usually
 without vestiture; palpus 1 about 1/2 length of 215
 Wing forks near base, radial often basad of medial; Rs pectinate; wing membrane with
 vestiture; palpus 1 short, about 1/3 length of 2**Brunettia** (part)
 15(14). Antennal ascoids Y-shaped; gray or yellowish species usually without markings.....**Philosepedon**
 Ascoids single rods or multipartite, but not Y-shaped; species usually varicolored and
 with markings**Telmatoscopus**

Subfamily PHLEBOTOMINAE

Genus *Phlebotomus* Rondani & Berté, 1840

Theodor, 1948, Bull. Ent. Res. 39: 85; 1958, Die Flieg. der Palaeark. Reg., Lief. 201 (classification).

Type species: flebotomus papatasi Scopoli, by monotypy.

Range. Largely tropicopolitan; Australia.

Members of this genus are distinguished by the slender wings, which are not as densely haired nor held as close to the body when at rest as in the Psychodinae, the long legs, elongate proboscis and hemispherical eyes without bridges. In nature they appear quite unlike the commoner psychodids and may be confused with other nematoceros Diptera as midges. However, their short, jerky flights when disturbed—rather than even, prolonged flight or hovering—is so consistently different from other small flies that field identification of *Phlebotomus* sandflies can be mastered with little first hand experience.

Feeding habits of this group in New Guinea are entirely unknown, other than that they are bloodsucking. Members of *Sergentomyia*, to which most New Guinea *Phlebotomus* belong, are predominantly feeders on coldblooded vertebrates. It is reasonable to assume that these are also the main hosts of New Guinea sandflies. No human bitings in New Guinea have been reported to our knowledge.

Phlebotomus utilize dark, shaded areas for daytime resting sites, which include tree holes and bark crevices, the interspaces of tree buttresses, caves and rock interspaces. They are readily disturbed by smoke, and cigarettes or a pipe is one of the sandfly collector's most useful tool; induced to move by smoke and thus becoming visible, specimens can then be collected in an aspirator. In drier areas, where the sandflies might retreat into soil crevices or animal burrows, this tool is less useful. Other devices, such as the Malaise trap or sticky paper traps, will then be more productive.

KEY TO SPECIES OF NEW GUINEA PHLEBOTOMUS

Key to Females

1. Abdomen with erect hairs, i.e. sockets on tergites 2-6 as large as on 1; fore femur shorter than tibia 2
- Abdomen with recumbent hairs, i.e. sockets on tergites 2-6, except on posterior margins, smaller than on 1; fore femur longer than tibia 3
- 2 (1). Cibarium higher than wide1. **papuensis***
- Cibarium wider than high2. **trifilis***

*Females of *papuensis* and *trifilis* are unknown, but these characters derived from the males are probably useful for separating the two from each other and other New Guinea species.

- 3 (1). Pharynx armed with patch of spines distally4
 Pharynx unarmed 7
- 4 (3). Smaller species, wing less than 2 mm; palp 3 shorter than 4; spermatheca not annulate;
 antenna 3 short, ends well before tip of proboscis..... 5
 Large species, wing about 3 mm long; palp 3 subequal to 4; spermatheca finely annulate,
 enlarged apically; antenna 3 long, extends beyond tip of proboscis.....3. *sibylas*
- 5 (4). Cibarium with more than 50 slender teeth 6
 Cibarium with about 20 thick teeth in crown-like row4. *coronatus*
- 6 (5). Pharynx armed with groups of short, faint spines; antenna 3 unusually short; erect teeth
 in 1 1/2 rows; about 80 horizontal teeth.....5. *englishi moresbyi*
 Pharynx armed with long, conspicuous spines; erect teeth in 2-3 rows; about 100 horizontal
 teeth6. *spinosior*
- 7 (3). Antenna 3 long, extending beyond tip of proboscis..... 8
 Antenna 3 shorter, not extending beyond tip of proboscis10
- 8 (7). Erect teeth arranged in 1 or 2 rows; cibarial teeth long, extending well above pigment
 patch when patch present 9
 Erect teeth arranged in group on each side with 1 or 2 rows across center; cibarial teeth
 short, projecting above pigment patch by about distance separating teeth.....7. *hoogstraali*
- 9 (8). Pigment patch large and prominent, triangular, extending across width of cibarium
8. *vanellus*
 Pigment patch absent (if present, teardrop-shaped and not covering width of cibarium,
 see discussion)9. *cidarius*
- 10 (7). Antenna 3 short, shorter than epipharynx11
 Antenna 3 longer than epipharynx14
- 11(10). Cibarium with more than 10 teeth12
 Cibarium with only 1, 2 or 3 large teeth; chitinous arch large and well developed.....
10. *brachycornutus*
- 12(11). Cibarial teeth coarse and distinct, less than 5013
 Cibarial teeth fine and indistinct, 130-15011. *dolichobysus*
- 13(12). Pleuron with brown on lower parts of meso- and metasternopleuron; 26-34 cibarial teeth.....
12. *cryptus*
 Pleuron entirely pale; 14-18 broad teeth13. *curtartus*
- 14(10). Posterior border of pigment patch smooth; cibarium with more than 16 teeth15
 Posterior border of patch indented in center; cibarium with only 4-6 short, triangular
 teeth; cibarium wide14. *fergusoni*
- 15(14). Cibarium with less than 30 teeth and 1 row of erect teeth, except sometimes partial
 second row in center16
 Cibarium with 58-62 teeth and 2-3 rows of erect teeth.....15. *kebarica*
- 16(15). 24-30 cibarial teeth in even row; pigment patch bicolored, anterior projection lighter
 than base16. *sansaporensis*
 About 18 cibarial teeth in fan-like row; pigment patch unicolored.....17. *noemforensis*

Key to Males

1. Dististyle with only 3 spines; abdomen with erect hairs 2
 Dististyle with 4 spines; abdomen with recumbent hairs 3
- 2 (1). Cibarium higher than wide, without pigment patch1. *papuensis*
 Cibarium shorter, wider than high, with small, triangular pigment patch2. *trifilis*
- 3 (1). Smaller species, wing length less than 2 mm; fore femur longer than tibia..... 4
 Large species, wing length 2.7 mm or more; fore femur shorter than tibia3. *sibylas*
- 4 (3). Antenna 3 not extending to tip of epipharynx..... 5

- Antenna 3 extending to or beyond tip of epipharynx 8
- 5 (4). Paramere ending in beak-like apex, i.e. apicoventral margin acute; dististyle with 2 apical and 2 subapical spines 6
- Paramere ending in bluntly rounded apex; dististyle with 2 apical spines, 1 subapical and 1 at 0.7 13. **curtartus**
- 6 (5). Genital filaments very long, 7-10 × pump 7
- Genital filaments 3-4 × pump; cibarium with about 40 teeth 5. **englishi moresbyi**
- 7 (6). Cibarium with 16 or more teeth 11. **dolichobyssus**
- Cibarium with 10-14 teeth 12. **cryptus**
- 8 (4). Dististyle cylindrical with 2 apical and 2 subapical spines or 3 apical and 1 subapical 9
- Dististyle rather short and rounded, with 3 apical spines and 1 at 0.7 distinctly basad of others; cibarium usually with triangular pigment patch; pale species 7. **hoogstraali**
- 9 (8). Palps 3 and 4 subequal in length, ratio = 13:14 10
- Palp 3 shorter than 4, ratio = 10:14 11
- 10 (9). Cibarium with 12 or less teeth in convex row; pharynx slender but enlarged distally into lampglass shape 8. **vanellus**
- Cibarium with 14 teeth in concave row; pharynx gradually widening from base to apex, not lampglass shaped 9. **cidarius**
- 11 (9). Paramere ending in beak-like apex, i.e. apicoventral margin acute 12
- Paramere ending in bluntly rounded apex; cibarium with 10-14 stout teeth and 8-12 erect teeth 16. **sansaporensis**
- 12(11). Cibarium with even row of coarse or granular teeth, cibarium slender 13
- Cibarium with about 6 triangular, well separated teeth, cibarium broad 14. **fergusoni**
- 13(12). Chitinous arch weak or absent; cibarium not sclerotized 14
- Chitinous arch well developed; cibarium heavily sclerotized 18. **quintus**
- 14(13). Pharynx unarmed 15
- Pharynx armed apically with fine spines; lower parts of meso- and metasternopleuron brown 6. **spiniosior**
- 15(14). Genital filaments 4-5 × pump; cibarium with 22-28 teeth 15. **kebarica**
- Genital filaments only 2 × pump; cibarium with 13 teeth 17. **noemforensis**

Subgenus **Australophlebotomus** Theodor

Phlebotomus (Australophlebotomus) Theodor, 1948, Bull. Ent. Res. 39: 99.

Type-species: Phlebotomus brevifilis Tonnoir, by orig. desig.

Range. New Guinea, Australia.

This group is characterized by the erect hairs (large hair sockets) on the abdominal terga; the rudimentary, but distinct, cibarial teeth; the short, semiovoid ♂ dististyle with 3 spines; the simple ♂ paramere; and the short ♂ genital filaments. The six species possessing these characters seem sufficiently different from those of *Sergentomyia* to warrant subgeneric ranking, although this classification may be untenable when both sexes are known in all species, as was suggested by Fairchild (1952).

1. **Phlebotomus (Australophlebotomus) papuensis** Fairchild

Phlebotomus papuensis Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 200.

Types (SPHTM): Papua, Oro Bay, Dobadura.

We have seen no specimens of this species, but the males seem to be easily recognized. The females are unknown. For a discussion of related taxa, see the following species.

2. **Phlebotomus (Australophlebotomus) trifilis** Quate and Quate, new species Fig. 1

♂. Cibarium short, length much less than width, 10 or 11 small granular teeth in straight row;

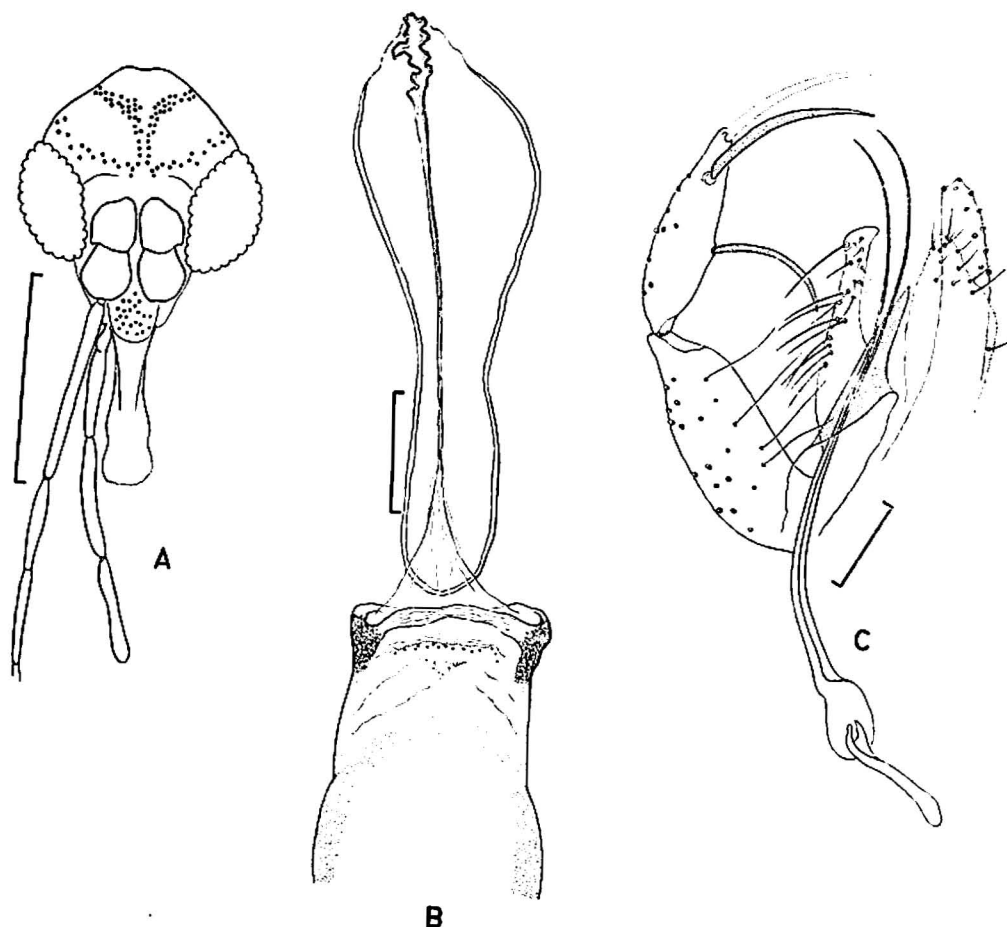


Fig. 1. *Phlebotomus trifilis*, ♂; a, head; b, cibarium & pharynx; c, genitalia, lateral. Scale lines of head=0.3 mm; others=0.05 mm.

small but distinct triangular pigment patch; chitinous arch well developed; pharynx apparently unarmed. Antenna 3 extending to tip of pharynx, equal to length of 4+5; ascoids paired on segments 3-14 at least, about 1/2 length of segment 4. Palpus 3 little longer than 4, 5 very long, ratio=15:16:14:40; segment 3 without apparent Newstead scales. Wing with R_{2+3} longer than R_2 , R_1 overlap very short, ratio of units=32:20:4. Ratio of fore leg=60:75. Dististyle with 3 spines, 1 at center, 1 near distal 1/4, and 1 terminal, no accessory seta; basistyle without nondeciduous hairs; aedeagus unevenly tapering to apex; genital filaments little more than 2× length of pump, plunger of pump without flaring expansion at base; paramere slightly beaked and expanded at apex.

Antenna 3=0.25 mm, 4+5=0.25 mm, epipharynx=0.20 mm. Wing length=1.66 mm, width=0.52 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7192): NW New Guinea, Vogelkop, Kebar Val., 550 m, 15.I.1962, tree hole, L. Quate.

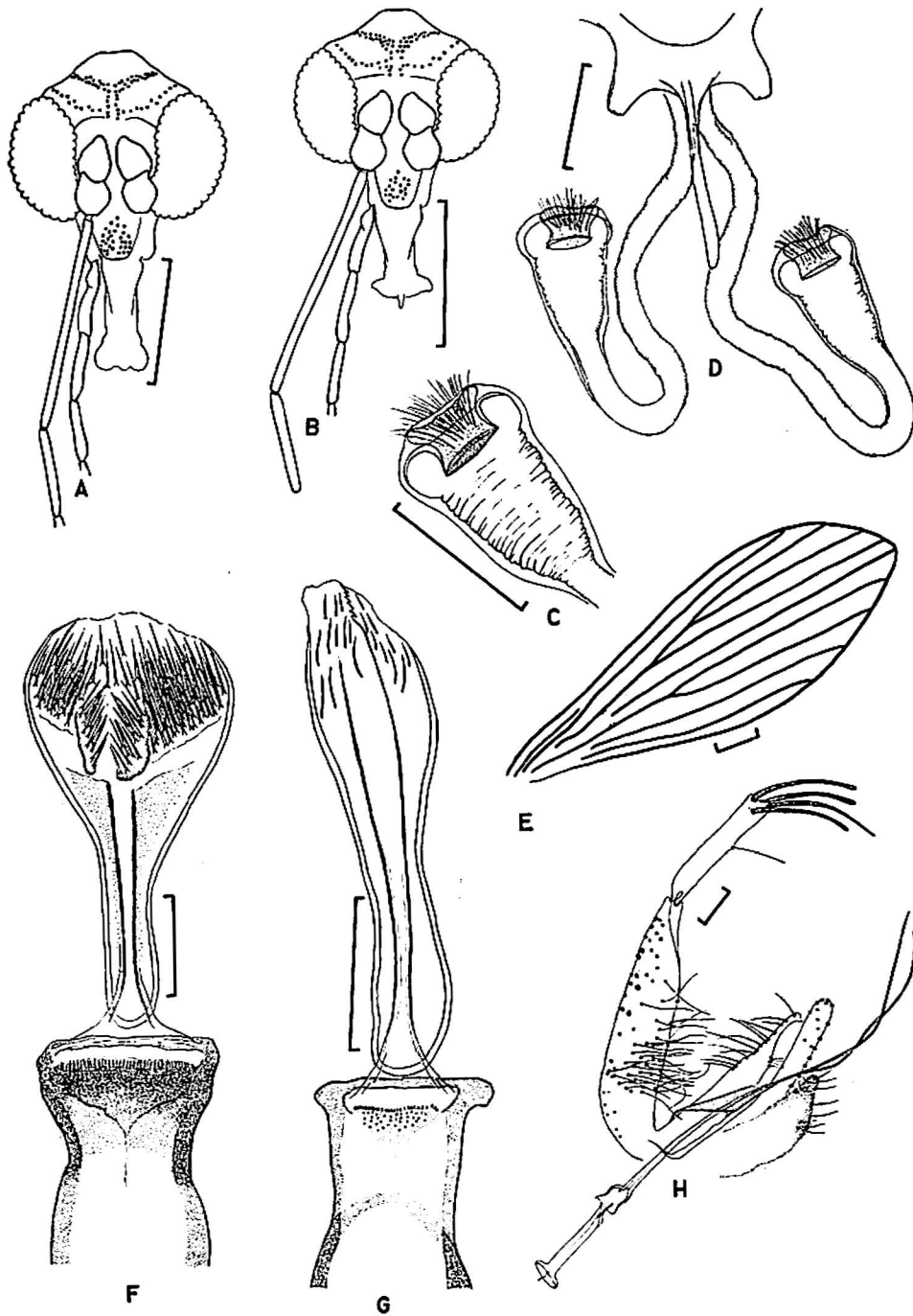


Fig. 2. *Phlebotomus sibylas*: a, ♀ head; b, ♂ head; c, ♀ spermatheca; d, ♀ spermathecae & furca; e, ♀ wing; f, ♀ cibarium & pharynx; g, ♂ cibarium & pharynx; h, ♂ genitalia, lateral. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

This species is similar to *papuensis*, but differs most conspicuously in the short cibarium which is shorter than its width, whereas in *papuensis* the cibarium is longer than its width; also, there is a distinct pigment patch in *trifilis* but none in *papuensis*. The genitalia of the two species differ in that the center spine of the dististyle in *papuensis* is subterminal while it is well removed from the apex in *trifilis*; the shape of the aedeagus and plunger of the genital pump also differs in the two species.

The above two species are related to the Australian *brevifilis* Tonnoir, *brevifiloides* Fairchild, *buccinator* Fairchild, and *pexopharynx* Fairchild. In our opinion the six are consubgeneric, but the New Guinea species are not difficult to distinguish from the Australian ones as described and figured by Fairchild (1952).

Subgenus *Sergentomyia* França & Parrot

Phlebotomus (*Sergentomyia*) França & Parrot, 1920, Bull. Soc. Path. Exot. 13: 696.—Quate, 1964, J. Med. Ent. 1: 249.

Sergentomyia: Theodor, 1948, Bull. Ent. Res. 39: 100; 1958, Flieg. Pal. Reg. Lief. 201, p. 33.

Type-species: *Phlebotomus minutus* Rondani, by subseq. desig. França, 1921.

Range. Ethiopian, Palaearctic, Oriental, Australasian Regions.

The majority of *Phlebotomus* species falls into this subgenus, which is characterized by the lack of erect hairs (and large hair sockets) on the abdominal terga, except along the posterior margins, and the well developed armature in the cibaria; the armature is weaker in the males than in the females.

Females of *Sergentomyia* feed mainly on coldblooded vertebrates.

3. *Phlebotomus* (*Sergentomyia*) *sibylas* Quate and Quate, new species Fig. 2.

Large, brown or dark species, apex of pharynx with dense cluster of spines, pigment patch very dark brown.

♀. Cibarium with 38–70 fine teeth in comb-like row; erect teeth numerous, in 5 or 6 rows; pigment patch very dark and heavily pigmented, top-shaped, with small, short anterior projection; chitinous arch thin and poorly developed; pharynx expanded posteriorly and with dense patch of spines distally. Antenna 3 very long, extending well beyond tip of proboscis, more than 2× epipharynx and about 1/4 longer than 4+5; ascoids paired on segments 3 to 13. Palps 3 and 4 subequal, but 4 usually a little shorter than 3, ratio = 15:15:14:30, Newstead scales present on 3. Wing with very short R_{2+3} , which is about 1/4 length of R_2 . Fore femur shorter than tibia, ratio=40:50. Spermatheca as illustrated, finely annulate, distal part expanded into bulb-like expansion, bearing dark, drum-like structure interiorly.

Antenna 3=0.47 mm (0.44–0.49), 4+5=0.38 mm, epipharynx=0.22 mm (0.21–0.23). Wing length=3.02 mm (2.87–3.29), width=0.96 mm (0.92–1.03).

♂. Similar to ♀. Cibarium with about 32–42 short teeth in close set row and numerous erect teeth in 4 or 5 rows; pigment patch poorly developed. Antenna 3 extending far beyond tip of proboscis; ascoids single. Dististyle with 3 apical and 1 subapical spines, accessory seta at 0.7; basistyle with few, small nondeciduous hairs; filaments about 4× pump; tergite 5 little larger than 6.

Antenna 3=0.47 mm (0.44–0.50), 4+5=0.41 mm, (0.40–0.42), epipharynx=0.20 mm (0.19–0.20). Wing lengths=2.67 mm (2.50–2.81), width =0.79 mm (0.75–0.83).

Holotype ♀, allotype ♂ (BISHOP 7193): NW New Guinea, Star Mts., Sibil Val., 1250 m, 2.II.1961, tree hole, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 78 ♀♀, 9 ♂♂, same data.

Specimens of *P. sibylas* were found at only one place in the floor of the valley in a small patch of undisturbed rain forest. Specimens were collected from the trunk of a tree covered with moss.

This species is a distinctive one and should not be confused with other species in New Guinea or Australia. The structures of the cibarium and pharynx are unlike other species now known. Also, the female spermatheca is distinctive. The size exceeds that of most species of *Sergentomyia*.

4. ***Phlebotomus (Sergentomyia) coronatus*** Quate and Quate, new species Fig. 3a-b.

Pleuron and scutum largely brown; pharynx lightly spinose; antenna 3 very short, considerably shorter than epipharynx.

♀. Cibarium with 20 linear teeth in crown-like row; 10 erect teeth in single row close to base of horizontal teeth; pigment patch not visible; chitinous arch weak; pharynx lightly armed with small spines, slender. Antenna 3 very short, ending well before tip of proboscis, shorter than 4+5 and epipharynx; ascoids paired on segments 3-13, single on 14 and 15, $0.6 \times$ segment 4. Palp 3 little shorter than 4, ratio=9:10:10:19, Newstead scales present on 3. Wing with $R_{2+3} 2.5 \times R_2$, R_1 ends at radial fork. Fore femur longer than tibia, ratio=18:14. Spermatheca elongate, cylindrical.

Antenna 3=0.9 mm, 4+5=0.10 mm, epipharynx=0.15 mm. Wing length=1.17 mm, width=0.30.

♂. Unknown.

Holotype ♀ (BISHOP 7194): NW New Guinea, Hollandia-Binnen, 100 m, 24.XI.1958, light trap, J.L. Gressitt.

One other female from Daru Island, Papua, probably belongs to this species, also. The short third antennal segment and apparently the cibarial structures are identical but the cibarium is indistinct and distorted, so this specimen can not be identified with certainty.

P. coronatus is most similar to *englishi* of the New Guinea species with a spinose pharynx. However, it differs markedly from *englishi* in having only 20 teeth instead of 80. *P. coronatus* seems more closely related to *queenslandi*, an Australian species.

5. ***Phlebotomus (Sergentomyia) englishi moresbyi*** Fairchild

Phlebotomus englishi subsp. *moresbyi* Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77:201.

Type (SPHTM): Papua, Port Moresby.

We have seen no specimens of this species. The lightly armed pharynx, short third antennal segment and about 80 fine cibarial teeth appear to separate the females from related species. Males (based on the description of *englishi* Tonnoir, 1935) are similar to other New Guinea species with the typically beaked paramere and short third antennal segment and differ only in the number of cibarial teeth as indicated in the key.

This subspecies was based on a single female, which differs from the nominate form in minor differences. The author indicated that those differences may well be included within the normal variation of the nominate form. Until further studies are made, the subspecific status of this form is retained.

6. ***Phlebotomus (Sergentomyia) spinosior*** Quate and Quate, new species Fig. 3c-h.

Small species, pleuron largely pale but lower parts of meso- and metasternopleuron usually pale brown, scutum brown; apex of pharynx armed; antenna 3 subequal to 4+5.

♀. Cibarium with about 100 fine, linear teeth in dense, comb-like row (difficult to count accurately); 3-5 rows of erect teeth, first row uniform and teeth close together consisting of 25-40 teeth, other rows with teeth irregularly distributed and containing 10-30 teeth; pigment patch

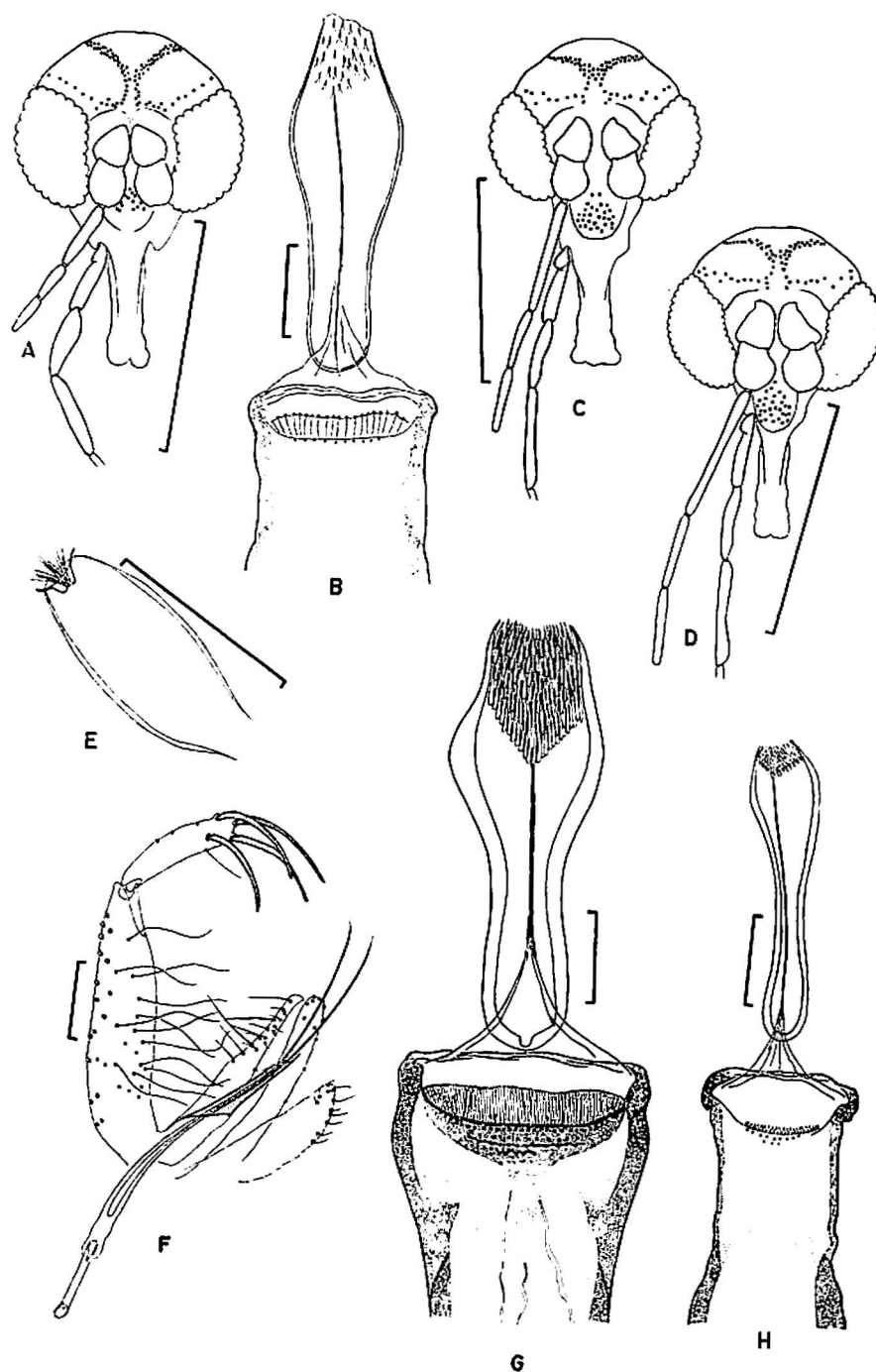


Fig. 3. a-b, *Phlebotomus coronatus*, ♀: a, head; b, cibarium & pharynx. c-h, *Phlebotomus spinosior*: c, ♀ head; d, ♂ head; e, ♀ spermatheca; f, ♂ genitalia, lateral; g, ♀ cibarium & pharynx; h, ♂ cibarium & pharynx. Scale lines of heads=0.3 mm; others=0.05 mm.

hemispherical with faint anterior projection; chitinous arch poorly developed; pharynx with conspicuous patch of spines distally. Antenna 3 short, not extending to tip of proboscis, subequal to 4+5; ascoids paired on segments 3-13, about 1/2 length of 4. Palp 3 considerably shorter than 4, ratio=10:10:14:32, Newstead scales present on 3. Wing with R_{2+3} longer than R_2 , R_1 overlap 1/3 to 1/2 R_2 . Fore femur little longer than tibia, ratio=23:21. Spermatheca as illustrated, ovoid.

Antenna 3=0.17 mm (0.16-0.18), 4+5=0.18 mm (0.17-0.19), epipharynx=0.17 mm (0.15-0.19). Wing length=1.54 mm (1.42-1.67), width=0.39 (0.35-0.42).

♂. Similar to ♀. Cibarium with 12-26 short, linear teeth usually in even row and 7-12 erect teeth in 2 or 3 rows; pigment patch not visible. Antenna 3 extending to or beyond tip of epipharynx, with ascoids single. Dististyle with 3 apical and 1 subapical spines, accessory seta at 0.8; basistyle with few scattered nondeciduous hairs; genital filaments 3-4 × pump; tergite 5 little larger than 6.

Antenna 3=0.18 mm (0.15-0.19) 4+5=0.19 (0.18-0.21) epipharynx=0.13 mm (0.12-0.14). Wing length=1.29 mm (1.20-1.37), width=0.28 mm (0.25-0.32).

Holotype ♀, allotype ♂ (BISHOP 7195): NW New Guinea, Vogelkop, Kebar Val., 550 m, 29.I.1962, S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 34 ♀♀, 55 ♂♂, same data but 7-30. I.1962, L. & S. Quate; 2 ♀♀ and 3 ♂♂, Manokwari, 1.II.1962, tree base, L. & S. Quate.

Specimens of this species were taken in permanently shaded parts of low-lying virgin rain forest. In this habitat they were collected in the Malaise trap and on tree trunks after being disturbed from their daytime resting places in tree cracks and crevices.

P. spinosior possesses a female cibarium much like that of *P. englishi moresbyi* Fairchild but differs in having a greater number of horizontal and erect teeth; *moresbyi* has 80 horizontal teeth and about 30 erect teeth in 2 rows close to the base of the horizontal teeth. The heavily spined pharynx and the longer fourth palpal segment of *spinosior* is quite different than those structures in *moresbyi*.

7. *Phlebotomus* (*Sergentomyia*) *hoogstraali* Fairchild Fig. 4.

Phlebotomus hoogstraali Fairchild, 1952, Proc. Linn. Soc. N.S.W. 7: 202.

Moderate-sized, pale species, pleuron pale with some brown markings on borders of sutures, scutum pale laterally with brown median stripe; cibarium with large pigment patch and many erect teeth; pharynx unarmed; antenna 3 longer than 4+5 and epipharynx.

♀. Cibarium with 12-14 short, pointed teeth, central ones shorter and more compact than lateral ones, project little beyond posterior border of pigment patch; 30-50 erect teeth arranged in group on each side with 1-3 rows across center; pigment patch roughly hemispherical with broad anterior projection which suddenly narrows at chitinous arch and terminates in sharp point, enlargement on posterior border; chitinous arch well developed; pharynx unarmed. Antenna 3 long, extending little beyond tip of proboscis, longer than 4+5 and epipharynx; ascoids paired on segment 3-13, single on 14 & 15, rather short, about 1/3 length of 4. Palp 3 variable, equal to or little shorter than 4, ratio=10:13:13:32 or 10:13:14, Newstead scales present on 3. Wing with R_{2+3} usually little shorter than R_2 , R_1 about 1/2 length of R_2 . Fore femur subequal to length of tibia, ratio=26:25. Spermatheca as illustrated, ovoid or elongate ovoid.

Antenna=0.25 mm (0.23-0.27), 4+5=0.21 mm (0.19-0.22), epipharynx=0.15 mm (0.14-0.16). Wing length=1.85 mm (1.71-2.03), width=0.49 mm (0.45-0.55).

♂. Similar to ♀. Cibarium with 10-14 short, sharp teeth, erect teeth difficult to discern but some specimens with 12; pigment patch faint, triangular with anterior projection. Antenna 3 extending well beyond tip of proboscis, ascoids single. Dististyle with 4 spines, of which 2 apical,

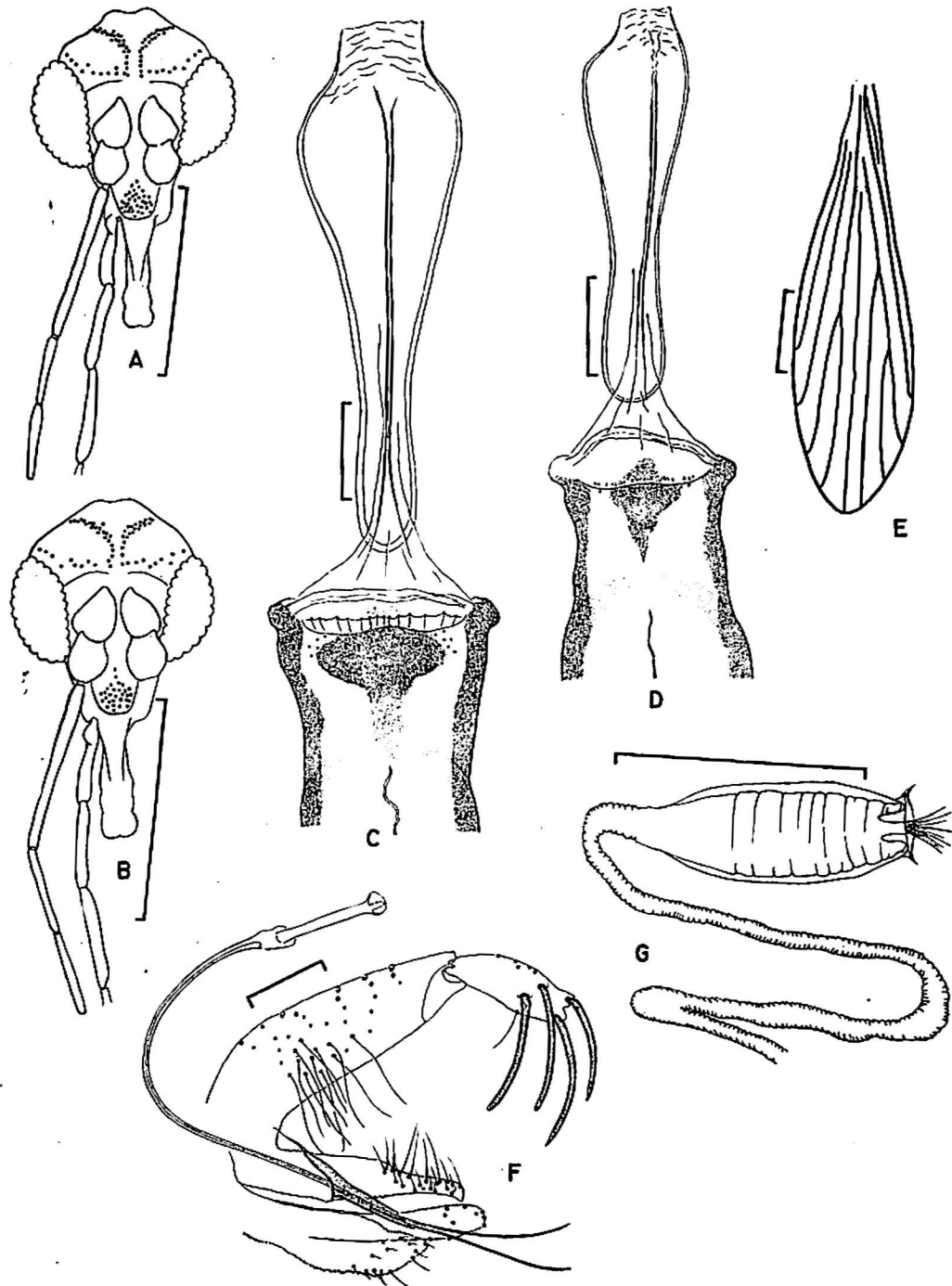


Fig. 4. *Phlebotomus hoogstraali*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium & pharynx; e, ♀ wing; f, ♂ genitalia, lateral; g, ♀ spermatheca & duct. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

1 subapical and 1 at 0.7, accessory seta at level of basal spine; basistyle with moderate number of nondeciduous hairs in well defined group; genital filaments long, 6-7× pump; tergites 5 & 6 subequal.

Antenna 3=0.24 mm (0.23-0.27), 4+5=0.22 mm (0.20-0.24), epipharynx=0.14 mm (0.13-0.16). Wing length=1.52 mm (1.42-1.62), width=0.36 mm (0.34-0.40).

Type (SPHTM): NW New Guinea, Hollandia.

NW NEW GUINEA: Vogelkop, Kebar Val., 16-24.I.1962, Malaise trap, L. & S. Quate, 16 ♀♀, 15 ♂♂; Central Mts, Archbold Lake, 760 m, 28.XI-2.XII. 1961, light trap and Malaise trap, L. & S. Quate, 43 ♀♀, 32 ♂♂; Hablifuri (Wal) R., 10 km E of Archbold L., 1200 m, 25.XI.1961, L. & S. Quate, light trap, 1 ♀, 1 ♂; Hollandia, 24.X.1958, light trap, J.L. Gressitt, 2 ♀♀. NE NEW GUINEA: Baitabag, 14 km N of Madang, 1.XII.1964, W. Steffan, 1 ♀; Morobe Distr, 15 km W of Lae, 19.IV.1965, Malaise trap, W. Steffan & Y.M. Huang, 5 ♀♀.

This is an apparently common species widely distributed in the rain forests of New Guinea.

P. hoogstraali is separable from other species, except *vanellus* and *cidarius*, by its larger size, pale coloration and long third antennal segment. Females differ from *vanellus* and *cidarius* by the shorter cibarial teeth, which project above the pigment patch only by about the distance between the teeth and the erect teeth forming clusters on each side. Males of *hoogstraali* differ from all other known New Guinea *Phlebotomus* by the short, rounded dististyle and arrangement of the 4 spines.

8. *Phlebotomus* (*Sergentomyia*) *vanellus* Quate and Quate, new species Fig. 5.

Moderate-sized, pale species, pleuron pale, scutum pale on sides with brown median stripe, fore coxa little darker than mid and hind coxae; cibarium with large, triangular pigment patch and prominent teeth; pharynx unarmed; antenna 3 extending beyond tip of proboscis.

♀. Cibarium with 20-24 strong, linear teeth in convex row, 14-28 erect teeth usually in single row but occasionally in 2 or 3 rows; pigment patch triangular with rounded posterior border and short anterior projection; chitinous arch strong; pharynx lampglass-shaped, unarmed, but with minute denticles. Antenna 3 extending beyond tip of proboscis, longer than 4+5 and epipharynx; ascoids short, about 1/3× 4, paired on segments 3-13, single on 14 & 15. Palp 3 little shorter than 4, occasionally of same length, ratio=11:14:15:36, Newstead scales present on 3. Wing with R_{2+3} equal to or longer than R_2 , R_1 overlap usually about 1/2 R_2 . Fore femur little longer than tibia, ratio=27: 25. Spermatheca as illustrated, ovoid.

Antenna 3=0.27 mm (0.23-0.29), 4+5=0.22 mm (0.21-0.24), epipharynx=0.16 mm (0.14-0.17). Wing length=1.82 mm (1.77-1.92), width=0.47 mm (0.42-0.50).

♂. Similar to ♀. Cibarium with 6-12 teeth which are linear but sometimes appearing merely as points apparently due to position, 4-10 erect teeth, irregularly distributed along base of horizontal teeth, often difficult to discern; pigment patch faint and usually not visible. Antenna 3 extending well beyond tip of proboscis, ascoids single. Dististyle with 2 apical and 2 subapical spines, accessory seta at 0.7; basistyle with few, scattered nondeciduous hairs; paramere slenderly beaked at apex, genital filaments 4× pump; tergite 5 little longer than 6.

Antenna 3=0.27 mm (0.24-0.30), 4+5=0.23 mm (0.22-0.25), epipharynx=0.14 mm (0.13-0.15). Wing length=1.54 mm (1.47-1.68), width=0.38 mm (0.35-0.40).

Holotype ♀, allotype ♂ (BISHOP 7196): NW New Guinea, Vogelkop, Kebar Val, 550 m, 6.31.I.1962, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 41 ♀♀, 8 ♂♂, same data; 1 ♀, Central Mts, Archbold L.; 760 m, 28-30. XI.1961, L. & S. Quate.

The long third antennal segment, prominent pigment patch and convex row of long cibarial teeth are distinctive of *vanellus* and separates females from other species, except for *hoogstraali* and *cidarius*. *P. hoogstraali* differs in having shorter teeth and the erect teeth arranged in groups on

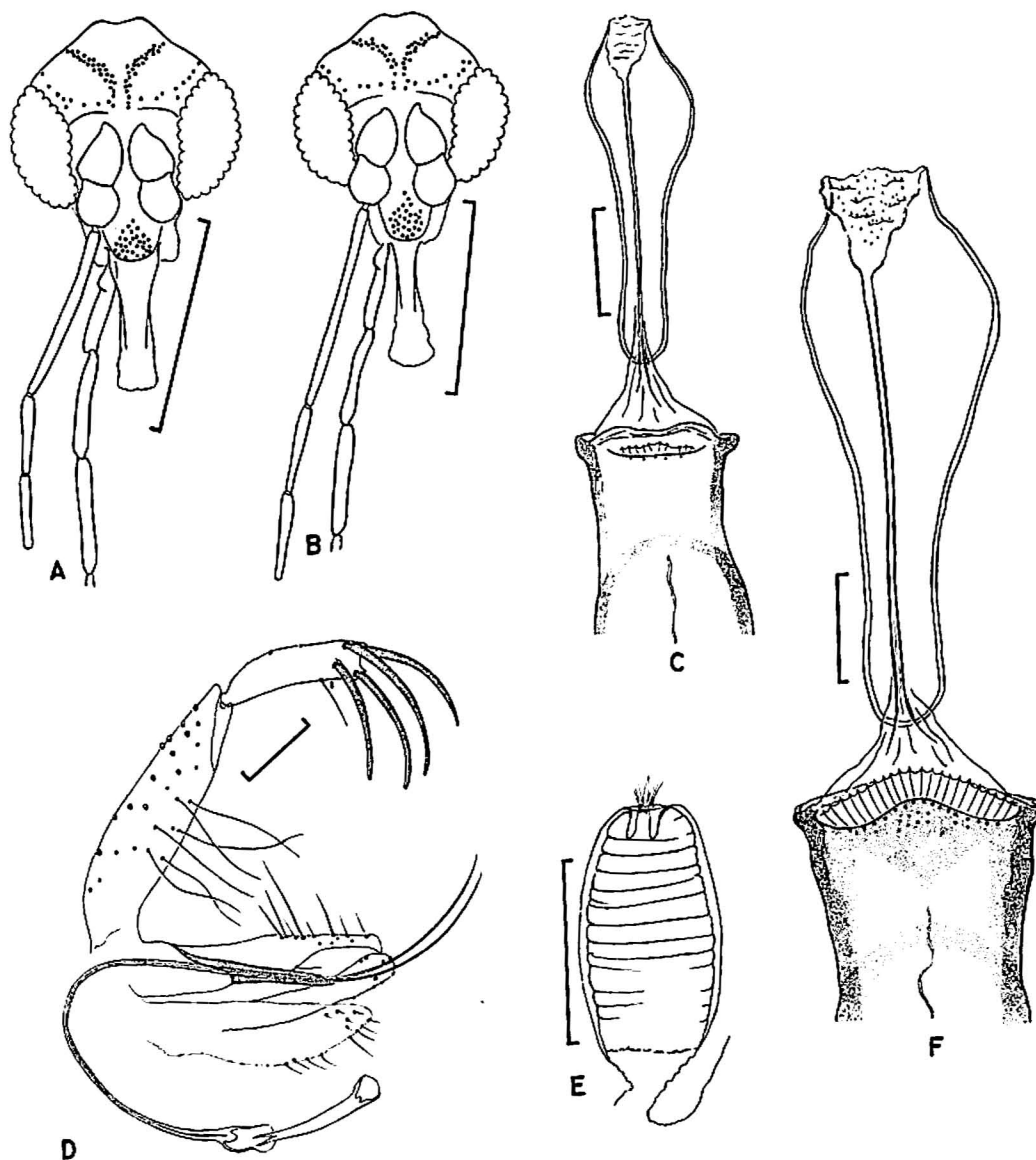


Fig. 5. *Phlebotomus vanellus*: a, ♀ head; b, ♂ head; c, ♂ cibarium & pharynx; d, ♂ genitalia, lateral; e, ♀ spermatheca; f, ♀ cibarium & pharynx. Scale lines of heads=0.3 mm; others=0.05 mm.

each side, rather than in one or two even rows. *P. cidarius* differs in having no pigment patch (or one of a different shape than in *vanellus*.) The cibarium of males of *vanellus* is less distinctive, but the long third antennal segment, pale thorax and larger size differentiates it from other species. *P. vanellus* differs from males of *hoogstraali* by lacking its distinctive dististyle and from *cidarius* by the smaller number of cibarial teeth.

fork basad of medial; Cu ending distad of medial fork; R_5 ending little beyond apex. Fore femur longer than tibia. Genitalia as figured; dististyle enlarged basally and tapering to slender, beak-like apex, subequal to length of basistyle; aedeagus nearly symmetrical, accessory piece on dorsal surface long and slender, but not extending to tip of aedeagus; surstyle long and slender, with single tenaculum.

Antenna=0.83 mm, wing length=2.00 mm, width=0.75 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7208): NE New Guinea, Baitabag, I.XII.1964, W.A. Steffan. Paratype (BISHOP): 1 ♂, same data as type.

Genus *Notiocharis* Eaton 1913

Type-species. *Notiocharis insignis* Eaton, by monotypy.

Range. Seychelle Is., Philippines, Borneo, New Guinea, Australia.

This group is unusual in a number of respects. There is a reduction of antennal segments in the male antenna to 12 (16 is the primitive number in psychodids), which has apparently resulted in fusion of the basal five flagellar segments into a single, elongate one; the male dististyle has become subdivided, and the eyes do not possess bridges. Presumably, the loss of the eye bridges is secondary, since nearly all other related genera possess them and their presence appears to be a primitive character of the subfamily Psychodinae.

The only other psychodine which lacks the eye bridges and might be confused with *Notiocharis* is *Paratelmatoscopus*. The features of the wing venation and antennal structure outlined in the key and those peculiarities noted above provide convenient differential diagnoses for the two genera. Loss of eye bridges is probably a separate derivation in the two genera.

KEY TO NEW GUINEA SPECIES OF NOTIOCHARIS

1. Palpus 4 small, shorter than or but little longer than 2, ratio of 2:4 no more than 15:16 2
- Palpus 4 much longer than 2 4
- 2(1). Palpus 2 much longer than 3; radial fork basad of medial 3
- Palpus 2 and 3 subequal; radial and medial forks on same level or radial basad; ♂ scape enlarged apicolaterally, fore femur with striated groove 27. **maai**
- 3(2). R_{2+3} more than 1/2 length of R_2 ; tip of Cu at about same level as radial fork; ♂ surstyle simple 28. **fragilis**
- R_{2+3} very short, less than 1/2 length of R_2 ; tip of Cu basad of level radial fork; ♂ dististyle with conspicuous protuberance 29. **miranda**
- 4(1). Interocular suture straight or nearly so 5
- Interocular suture arched 7
- 5(4). M_4 ending but little distad of medial fork; palpus 2 usually longer than 3 6
- M_4 ending well beyond medial fork; palpus 2 and 3 subequal; outer lobe of ♂ dististyle with patch of blunt bristles at base on inner face 31. **assimilis**
- 6(5). Wing slender and lanceolate, length about 4 × width; ♂ fore femur without row of bristles; ♀ subgenital plate concave at apex and weakly bilobed 30. **lanceolata**
- Wing length about 3 × width; ♂ fore femur with row of about 10 peg-like bristles; ♀ subgenital plate V-shaped at apex and clearly bilobed 35. **paxillosa**
- 7(4). Tip of Cu clearly basad of radial fork 8
- Tip of Cu at level of radial fork; ♂ dististyle ending in apical and preapical, recurved points 32. **papuensis**
- 8(7). Inner lobe of ♂ dististyle slender and sinuous, aedeagus tubular and slender; lobes of ♀ subgenital plate merely touching at base 33. **stellae**

Holotype ♂, allotype ♀ (BISHOP 7206): NE New Guinea, Kundiawa, 6-8.I.1965, Malaise trap, W.A. Steffan. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 17 ♂♂, 5 ♀♀, same data as types.

It is with pleasure that we dedicate this species to our colleague at the Bishop Museum, Dr W.A. Steffan.

25. ***Pericoma agrestis*** Quate and Quate, new species Fig. 15g-i.

♂. Eyes separated by less than 1 facet diameter, interocular suture V-shaped with small median spur; sides of vertex rounded, occiput elevated into dome-like protuberance with pair of small lobes on each side; frons largely covered with rectangular patch of hair and few scattered hairs on midline extending to lower margin of eye bridge; ratio of palpal segments=8:12:14:20. Antenna with scape about 1.5× pedicel; ascoids with 3-5 anterior branches; apical part broken. Wing with radial fork basad of medial; Cu distad of medial fork; R_s ending little behind apex. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to beak-like apex; aedeagus slightly curved, accessory piece slender and extends little beyond apex of aedeagus; surstyle very long, with single tenaculum.

Wing length=2.52 mm, width=0.97 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7207): NE New Guinea, Bulolo Gorge, between Bulolo and Wau, 900 m, 19.XII.1961, streamside vegetation, S. Quate.

26. ***Pericoma peregrina*** Quate and Quate, new species Fig. 16a-e.

A moderately large, pale species.

♂. Eyes separated by about 1 facet diameter, interocular suture narrowly V-shaped; sides of vertex rounded and occiput elevated into dome-like protuberance; most of frons covered by rectangular patch and few scattered hairs on midline extending to lower margin of eye bridge; ratio of palpal segments=8:11:16:20. Antenna with scape about 1.5× pedicel, ascoids with 3-5 anterior branches; terminal 2 segments subglobular, terminal with long, clavate apiculus. Wing with radial

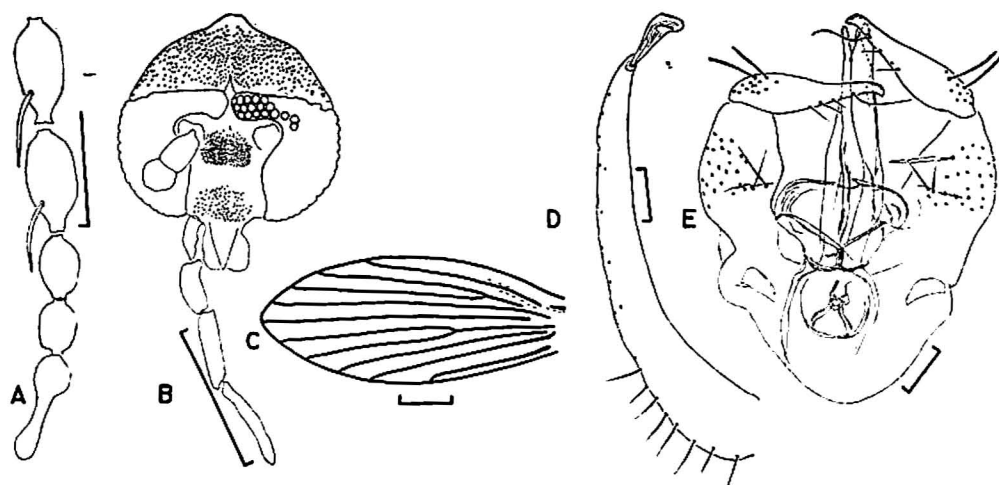


Fig. 16. a-e, *Pericoma peregrina*, ♂: a, antenna; b, head; c, wing; d, surstyle; e, genitalia, dorsal. Scale lines of head & wing=0.3 mm; others=0.05 mm.

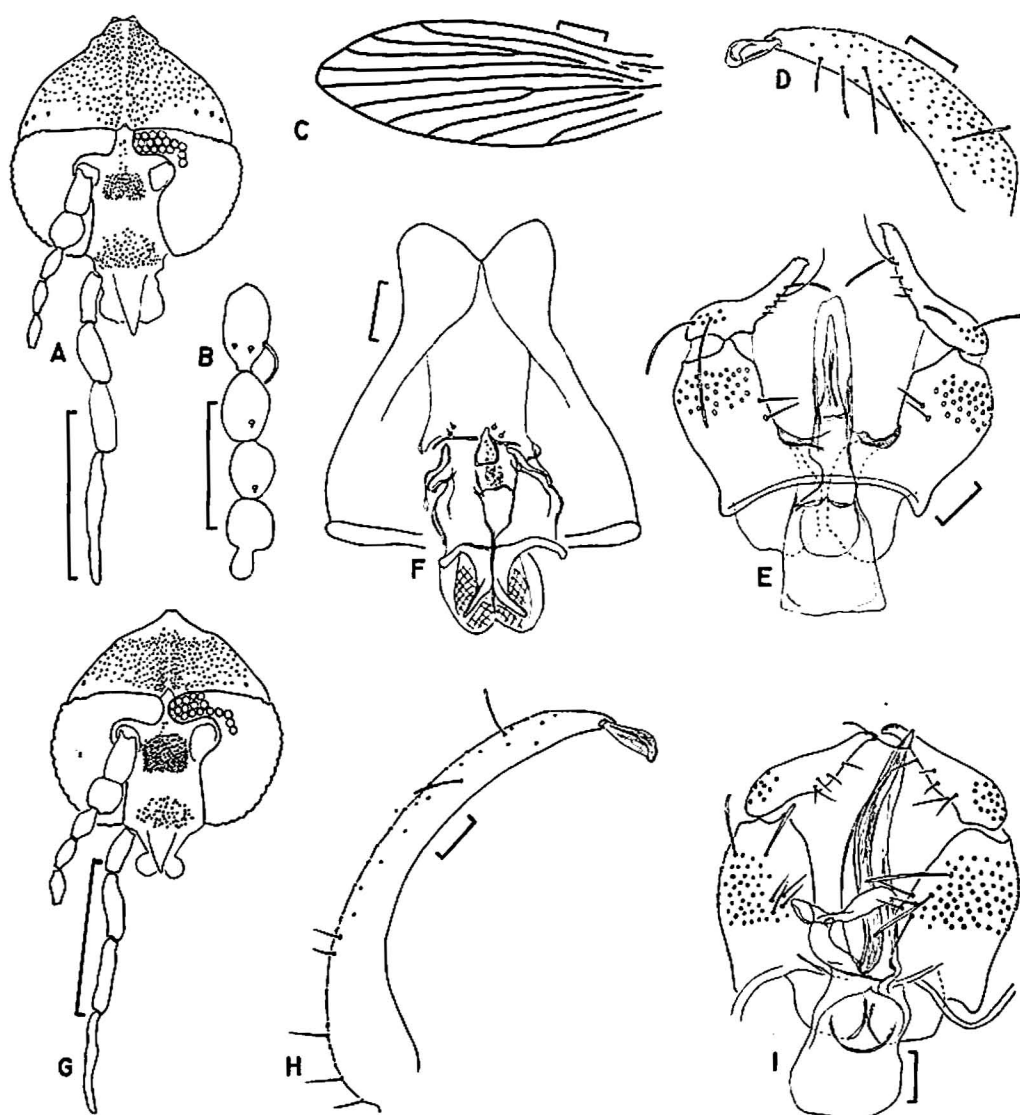


Fig. 15. a-f, *Pericoma steffani*: a, ♂ head; b, ♂ antenna tip; c, ♂ wing; d, ♂ surstyle; e, ♂ genitalia, dorsal; f, ♀ genitalia. g-i, *Pericoma agrestis*: g, ♂ head; h, ♂ surstyle; i, ♂ genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

same level; Cu ending before level of medial fork. Fore femur shorter than tibia. Genitalia as figured; aedeagus nearly symmetrical, base widely expanded, with short accessory piece attached to dorsal surface near center, piece not extending to tip of aedeagus; dististyle curved basally and ending in sharp beak-like point; surstyle of moderate length, with single tenaculum.

Antenna=0.79-(0.90)mm, wing length=2.25 mm (2.15-2.40), width=0.72 mm (0.67-0.80).

♀. Similar to ♂. Genitalia as figured; cerci very long and slender.

Wing length=2.40-2.55 mm, width=0.77-0.85 mm.

Other specimens: NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, light trap, 1 ♀; NW New Guinea, Waris, 450 m, 1-7. VIII.1959, at light, T.C. Maa, 1 ♀; NE New Guinea, Wau, 1200 m, 13-17.XII.1961, Malaise trap, J. Sedlacek, 1 ♀.

This is one of the most unusual and distinctive species of *Trichomyia*. Insofar as we know, it is the only species which has a 2-segmented coxite in the ♂ genitalia; this is the usual condition in the related genus *Sycorax*, but prior to now, unknown in *Trichomyia*. Undoubtedly this species will have an important bearing on phylogenetic studies within the subfamily Trichomyiinae, but at the moment, its significance and relationship to other members of the subfamily is not clear.

The female also is an unusual species. We know of no structures analogous to the spinose, funnel-shaped structures in the abdomen. They presumably are associated with the reproductive system, but this is not evident from slide-mounted specimens and mere speculation. A detailed examination of these should prove intriguing.

Subfamily PSYCHODINAE

Genus *Pericoma* Walker 1856

Eyes separated. Antenna 16-segmented; flagellar segments spindle-shaped; terminal 2 segments often reduced but not fused; 1st palpal segment more than 1/2 length of 2. Wing membrane bare; apex rounded; R_5 ending beyond apex; radial fork not distad of medial. In Australasian species, ♂ genitalia with aedeagus complex and usually asymmetrical, surstyle with single tenaculum.

Type-species. *Trichoptera trifasciata* Meigen, by subsequent designation, Coquillett 1910.

Range. Cosmopolitan, but largely absent from tropics.

The Australasian species of *Pericoma* differ from Holarctic species in the complex, asymmetrical aedeagus and single tenaculum of the surstyle in the male genitalia; the relationships of this group seem to be with South American species and further study of this group would be of interest to Antarctic zoogeography.

The New Guinea species are similar to the Australian ones, but have developed into a separate group. While possessing the main characters that sets the Australasian species apart, the New Guinea species form a compact species cluster that indicates an independent evolutionary development from a single ancestor. Their origin must have been with the Australasian stock, but the present divergence from those species is well marked and the two groups must have had a separate evolutionary development for a considerable time.

KEY TO NEW GUINEA SPECIES OF PERICOMA

1. Radial fork basad of medial; Cu ending beyond level of medial fork 2
- Radial and medial forks on same level; Cu ending before level of medial fork24. **steffani**
2. ♂ dististyle and basistyle subequal in length; accessory piece attached to dorsum of aedeagus
not extending to tip of aedeagus25. **agrestis**
- ♂ dististyle considerably shorter than basistyle; accessory piece of aedeagus extending beyond
tip of aedeagus26. **peregrina**

24. *Pericoma steffani* Quate and Quate, new species Fig. 15a-f.

♂. Eyes separated by 2 facet diameters, interocular suture arched, interrupted in center and with long median spur; sides of vertex sloping, pair of preapical protuberances on sides, occiput protuberant and concave in center; frons with rectangular hair patch and sparse median band extending to center of eye bridge; palpus with segments 2 and 3 inflated, ratio=10:12:13:27. Antenna with scape and pedicel subequal, ascoids V-shaped or Y-shaped. Terminal 2 segments subglobular, terminal with blunt apiculus. Wing membrane infuscate; radial and medial fork on

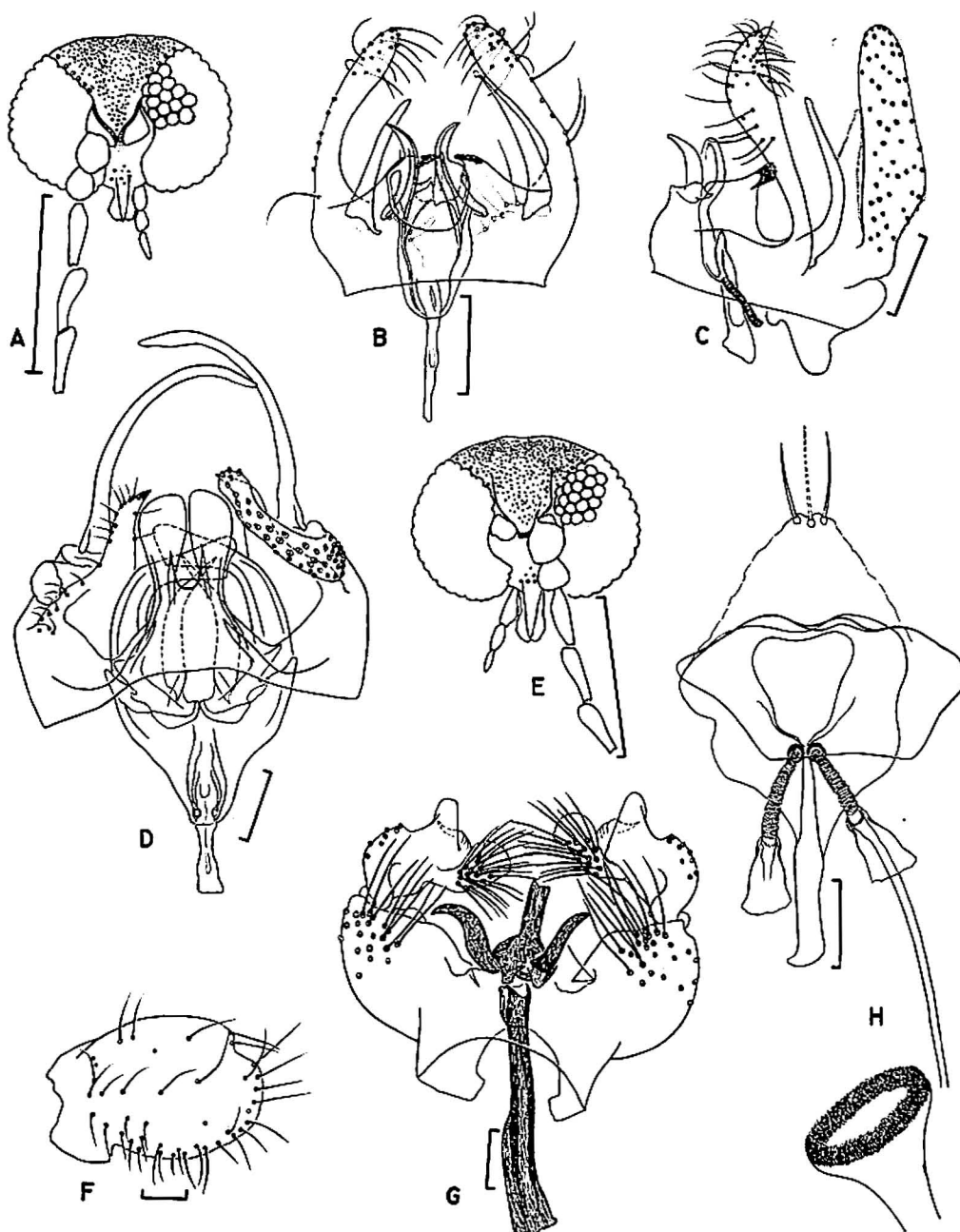


Fig. 14. a-c, *Trichomyia trivalis*: a, ♂ head; b, ♂ genitalia, dorsal; c, ♂ genitalia, lateral. d-e, *Trichomyia falcata*: d, ♂ genitalia, dorsal (left coxite not shown); e, ♂ head. f-h, *Trichomyia singularis*: f, ♀ cercus; g, ♂ genitalia, dorsal; h, ♀ genitalia & abdominal structure (see text). Scale lines of heads=0.3 mm; others=0.05 mm.

L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 8 ♂♂, same data as types but some VII-XII.1961, at light, R.T. Simon Thomas.

21. *Trichomyia trivialis* Quate and Quate, new species Fig. 14a-c.

Scutum brown, except pale area between midline and lateral border; pleuron and coxae lightly tinted with brown but center of mesepisternum a little darker.

♂. Palpus with segment 1 nearly 2× as long as 2, ratio of segments=25:14:17. Wing with R_2 and M_2 weakened at forks; radial fork well basad of tip of R_1 ; Cu ending at level of medial fork. Fore femur longer than tibia. Genitalia as figured; coxite clavate and much longer than its slender, bare appendage; aedeagus ending in 2 acutely pointed, outwardly curving points; paramere with about 8, dark, blunt teeth on each lobe.

Antenna=1.47 mm, wing length=1.37-1.42 mm, width=0.52-0.60 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7203): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 8 ♂♂, same data but some light trap.

22. *Trichomyia falcata* Quate and Quate, new species Fig. 14d-e.

A large species; scutum brown except pale area between midline and lateral border; pleuron pale except center of mesepisternum brown; coxae pale brown.

♂. Head with blunt, V-shaped sulcus between eyes and beginning at level of antennal bases; ratio of palpal segments=25:18:16, segment 3 sometimes subequal to 2. Wing with radial fork well basad of tip of R_1 ; Cu ending at about level of medial fork. Fore femur longer than tibia. Genitalia as figured; coxite short, much shorter than its long, sickle-like lobe; aedeagus with 2 pairs of lobes, 1 pair curved and obliquely truncate and other pair paddle-shaped; paramere with numerous, dark bristles at apex.

Antenna=1.53 mm, wing length=1.45-1.50 mm, width=0.57-0.60 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7204): NW New Guinea, Hollandia, 22.XII.1961-2.I.1962, light trap, L. & S. Quate. Paratype (BISHOP): ♂, same but 27.VII.1955, J.L. Gressitt.

This large species of *Trichomyia* has distinctive genitalia in which the very long, slender lobes of the coxite extend well beyond other parts of the genitalia and at once separate it from other New Guinea members of the genus.

23. *Trichomyia singularis* Quate and Quate, new species Fig. 14f-h.

A large, dark species; scutum largely brown except pale spot between midline and lateral border; pleuron and coxae brown.

♂. Palpus with segments 2 and 3 very short, with ratio=34:15:18. Wing with radial fork near tip of R_1 ; Cu ending at level of medial fork. Fore femur longer than tibia. Genitalia as figured; coxite 2-segmented, dististyle curiously shaped, irregular, bilobed structure; aedeagus ending in central tube-like structure and pair of flanking, outwardly curved points.

Antenna=1.65 mm, wing length=1.80-1.87 mm, width=0.75-0.77 mm.

♀. Similar to ♂. Genitalia as figured; spermatheca funnel-shaped and with very short ducts; a pair of large, funnel-shaped structures in segment 7, apical opening ringed with dense rows of black bristles, much larger than spermatheca.

Antenna=1.45 mm, wing length=1.97 mm, width=0.80 mm.

Holotype ♂, allotype ♀ (BISHOP 7205): NW New Guinea, Vogelkop, Kebar Val., 22-24.I.1962, Malaise trap and light trap, L. & S. Quate. Paratype (BISHOP): 1 ♂, same data.

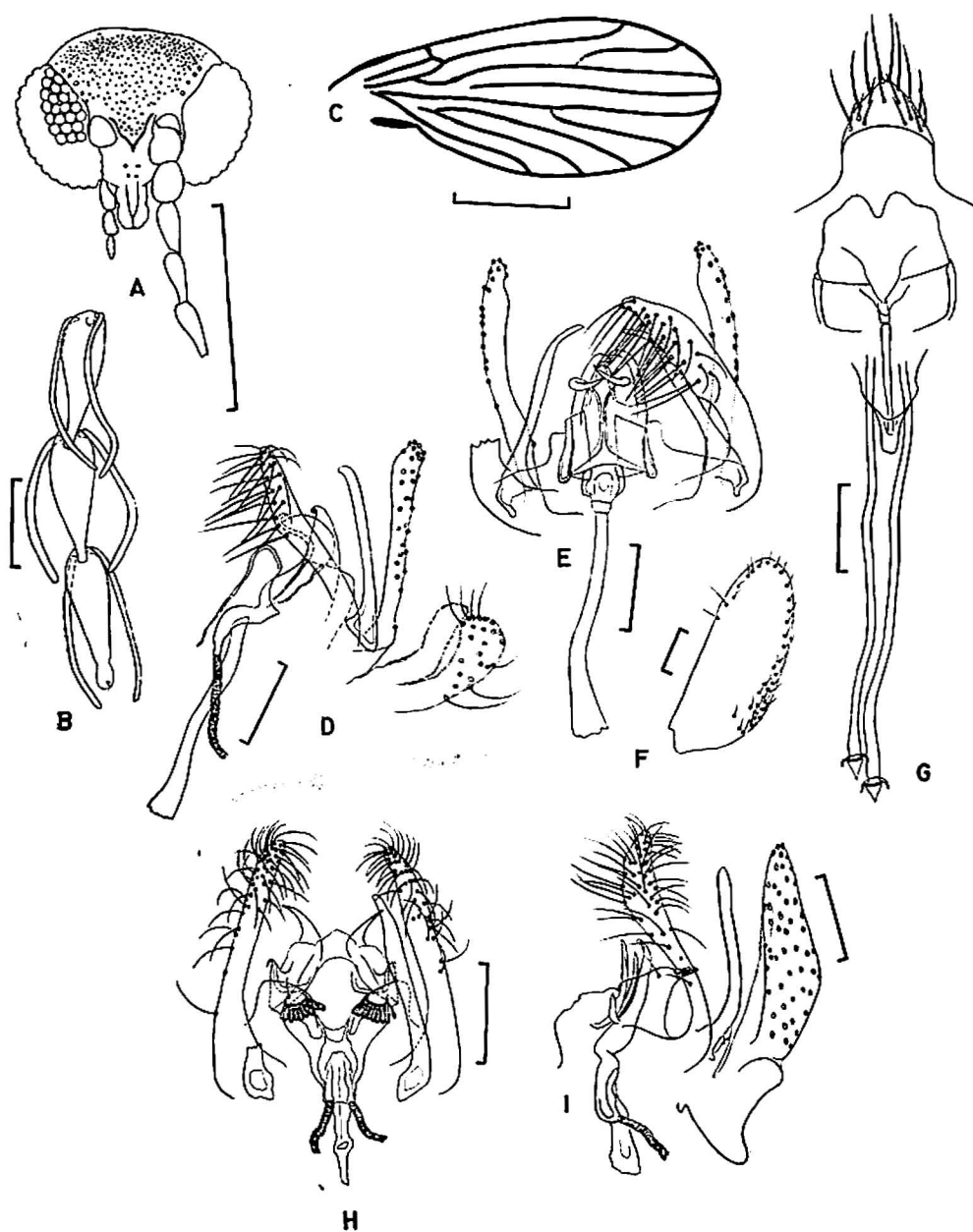


Fig. 13. a-g, *Trichomyia furtiva*: a, ♂ head; b, ♂ antenna; c, ♂ wing; d, ♂ genitalia, lateral; e, ♂ genitalia, dorsal; f, ♀ cercus; g, ♀ genitalia. h-i, *Trichomyia noctivolata*: h, ♂ genitalia, dorsal; i, ♂ genitalia, lateral. Scale lines of head=0.3 mm; others=0.05 mm.

A specimen from the Star Mts. and another from the Markham Valley are the only New Guinea representatives of *Sycorax* we have seen. Neither are suitable for description and we can merely record the presence of two species of *Sycorax* in New Guinea.

Genus **Trichomyia** Curtis 1839

Type-species: *Trichomyia urbica* Curtis, by monotypy.

Range. Cosmopolitan.

KEY TO NEW GUINEA SPECIES OF TRICHOMYIA

1. Radial fork well before tip of R_1 2
Radial fork a little basad of tip of R_1 ; large species, wing length 1.8 mm or more; ♂ coxite 2-segmented, dististyle a curiously shaped, bilobed structure; ♀ with pair of large setose, funnel-like structure in abdomen.....23. **singularis**
2. Wing length 1.3 mm or more 3
Wing length 1.2 mm or less 4
3. ♂ genitalia with coxite (upper, haired appendage) much shorter than long, slender, bare appendage attached to its base22. **falcata**
♂ coxite longer than its bare appendage21. **trivialis**
4. ♂ genitalia with paramere (lobes adjacent to aedeagus) with about 10, blunt teeth on apical border; ♀ unknown20. **noctivolata**
♂ genitalia without toothed lobes; ♀ genitalia as figured19. **furtiva**

19. **Trichomyia furtiva** Quate and Quate, new species Fig. 13a-g.

A small, pale species; scutum brown with pale area between midline and lateral border; pleuron pale except anterior part of mesepisternum; coxae pale.

♂. Ratio of palpal segments=20:13:14, but variable and palp 3 may be shorter than 2. Wing with radial fork well before tip of R_1 ; Cu ending at about level of medial fork. Fore femur longer than tibia. Genitalia as illustrated; coxite longer than its slender lobe, lateral border indented preapically; aedeagus box-like, with 4 curving points; parameres not discernible and without toothed structure in genitalia.

Wing length=1.07 mm (0.97-1.15), width=0.42 mm (0.30-0.47).

♀. Similar to ♂. Genitalia as figured; duct of spermatheca long and spermatheca in segment 7; basal rod of furca with semi-detached, arrow-like piece near center.

Wing length=1.02-1.25 mm, width=0.40-0.45 mm.

Holotype ♂, allotype ♀ (BISHOP 7201): NW New Guinea, Hollandia, 26.XII.1961, tree trunk, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 39 ♂♂, 4 ♀♀, same data as types and VII-XII.1961, at light, R.T. Simon Thomas.

20. **Trichomyia noctivolata** Quate and Quate, new species Fig. 13h-i.

A small, pale species; scutum brown except pale area midway between midline and lateral border; pleuron pale except anterior part of mesepisternum; coxae pale.

♂. Ratio of palpal segments=20:12:15, palpus 3 apparently invariably longer than 2. Wing with radial fork well before tip of R_1 ; Cu ending before medial fork. Fore femur longer than tibia. Genitalia as figured; coxite slender and parallel-sided in dorsal view; aedeagus ending in pair of outwardly curving, acutely tapering points; paramere with about 10, dark, blunt teeth on each lobe.

Antenna=0.98-1.09 mm, wing length=1.07-1.15 mm, width=0.42-0.45 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7202): NW New Guinea, Hollandia, 22.XII.1961-2.I.1962, light trap,

Antenna 3=0.19 mm (0.17-0.20), 4+5=0.19 mm (0.18-0.20), epipharynx=0.15 mm (0.14-0.17). Wing length=1.54 mm (1.40-1.62), width=0.39 mm (0.35-0.42).

♂. Similar to ♀. Cibarium with 10-14 short, granular or linear teeth and 8-12 erect teeth usually in single row; pigment patch not visible. Antenna 3 extending to or beyond tip of epipharynx, ascoids single and short, 1/4-1/3 × segment 4. Dististyle with 3 apical and 1 subapical spines, accessory seta at 0.7; basistyle with very few, scattered nondeciduous hairs; paramere with blunt apex, not beaked; genital filaments 3-4 × pump; tergite 5 little larger than 6.

Antenna 3=0.19 mm (0.17-0.20), 4+5=0.19 mm (0.18-0.20), epipharynx=0.12 mm (0.11-0.13). Wing length=1.20 mm (1.15-1.41), width=0.26 mm (0.25-0.28).

Holotype (SPHTM): NW New Guinea, Sansapor, Mar village.

NW NEW GUINEA: Kebar Val., 550 m, 7-31.I.1962, tree trunk and Malaise trap, L. & S. Quate, 50 ♀♀, 100 ♂♂.

P. sansaporensis may be most easily distinguished from the two species which it most closely resembles, *noemforensis* and *kebarica*, by the cibarial teeth; the 24-28 teeth of *sansaporensis* are distinct and easily counted and not difficult to distinguish from the smaller number of *noemforensis* and the larger number of *kebarica*. The males of *sansaporensis* are most readily identified by the blunt, un-beaked tip of the aedeagus. Otherwise, males are quite similar to some other species and the cibarial structures are not always reliable except in mounts which show the cibarium in a level position.

17. *Phlebotomus (Sergentomyia) noemforensis* Fairchild

Phlebotomus noemforensis Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 207.

Types (SPHTM): NW New Guinea, Geelvink Bay, Noemfor I.

This species is not represented in our material. The large cibarium with 18 long teeth in a fan-like row and strong chitinous arch seem distinctive of the females. Males apparently are similar to *kebarica* but differ in the very short genital filaments and fewer cibarial teeth.

18. *Phlebotomus (Sergentomyia) quintus* Fairchild

Phlebotomus quintus Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 207.

Types (SPHTM): NW New Guinea, Hollandia; NE New Guinea, Finschhafen.

We have seen no specimens of this species. Males agree closely with *kebarica* in relative lengths of antennal and palpal segments, wing venation, cibarial and genital characters. It apparently differs from that species in possessing a more heavily sclerotized cibarium and lacking the pigment patch that is present in *kebarica*. Without associated females, however, it is difficult to evaluate these differences and it is possible that *kebarica* is the same as *quintus*.

Subfamily TRICHOMYIINAE

Genus *Sycorax* Curtis 1839

Type-species: *Sycorax silacea* Curtis, by monotypy.

Range. Palearctic, Ethiopian, Neotropical, Australasian Regions; Malaya, Philippines, New Guinea, (Australia?), New Zealand.

The subfamily Trichomyiinae is easily recognized by the single longitudinal vein between the forks, in contrast to two in the other subfamilies, as well as the blunt wing apex and hemispherical eyes. Only two genera, *Sycorax* and *Trichomyia*, represent the subfamily in most parts of the world and they are easily distinguished by the short Cu and 4-segmented palpus in *Sycorax*.

Jung (1956) places *Sycorax* in a separate, monotypic subfamily largely on the basis of larval characters. His classification merits consideration, but to simplify identification of this small group, we have retained it in Trichomyiinae.

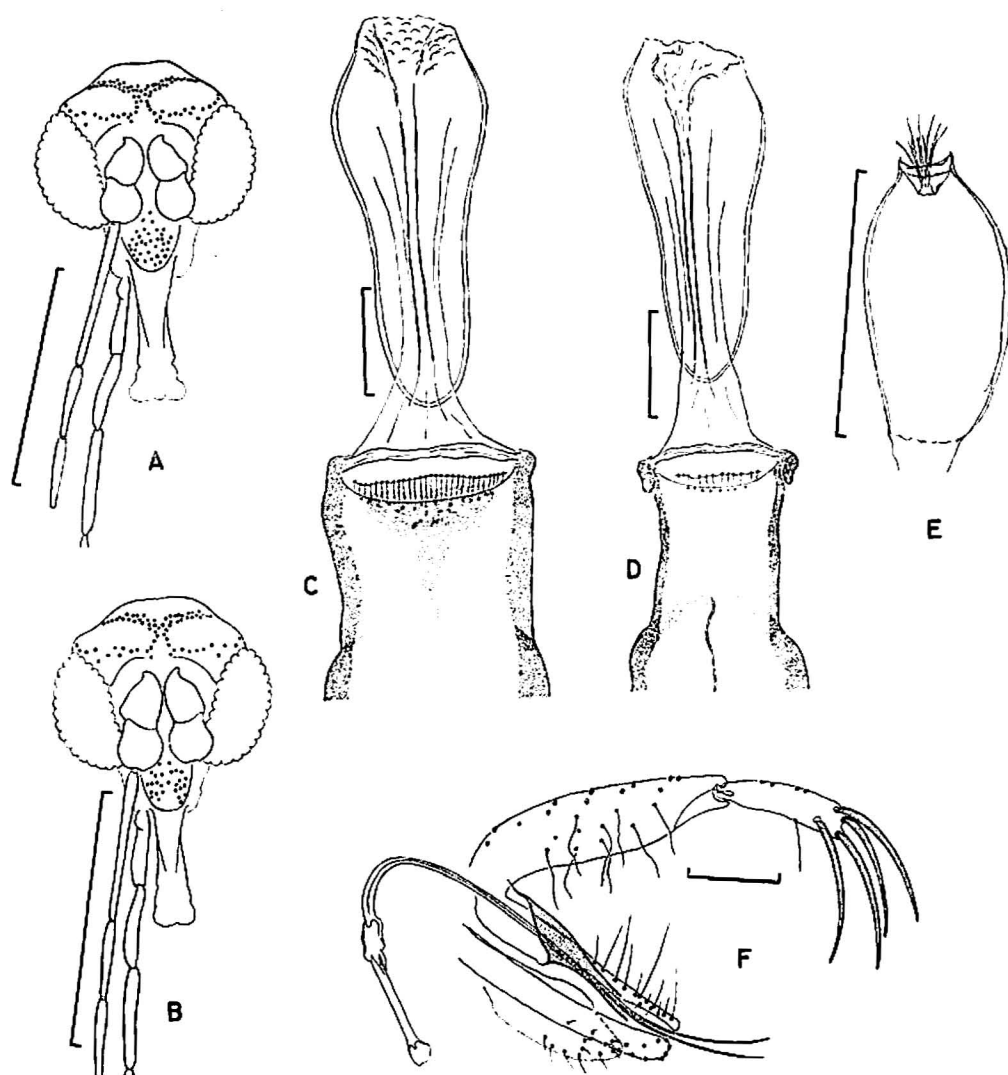


Fig. 12. *Phlebotomus sansaporensis*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium & pharynx; e, ♀ spermatheca; f, ♂ genitalia, lateral. Scale lines of heads=0.3 mm; others=0.05 mm.

single row or sometimes with additional second row only in median area; pigment patch top-shaped with long anterior projection extending to chitinous arch, projection paler colored than base; chitinous arch well developed; pharynx nearly straight-sided, unarmed at apex. Antenna 3 not extending beyond tip of proboscis, equal to or little shorter than 4+5 and longer than epipharynx; ascoids paired on segments 3-13 and single on 14 and 15, 0.6-0.7× segment 4. Palp 3 noticeably shorter than 4, ratio=10:10:13:27, Newstead scales present on 3. Wing with R_{2+3} variable, as long as or longer than R_2 , R_1 overlap about 1/2 R_2 . Fore femur longer than tibia, ratio=25:20. Spermatheca as illustrated, ovoid.

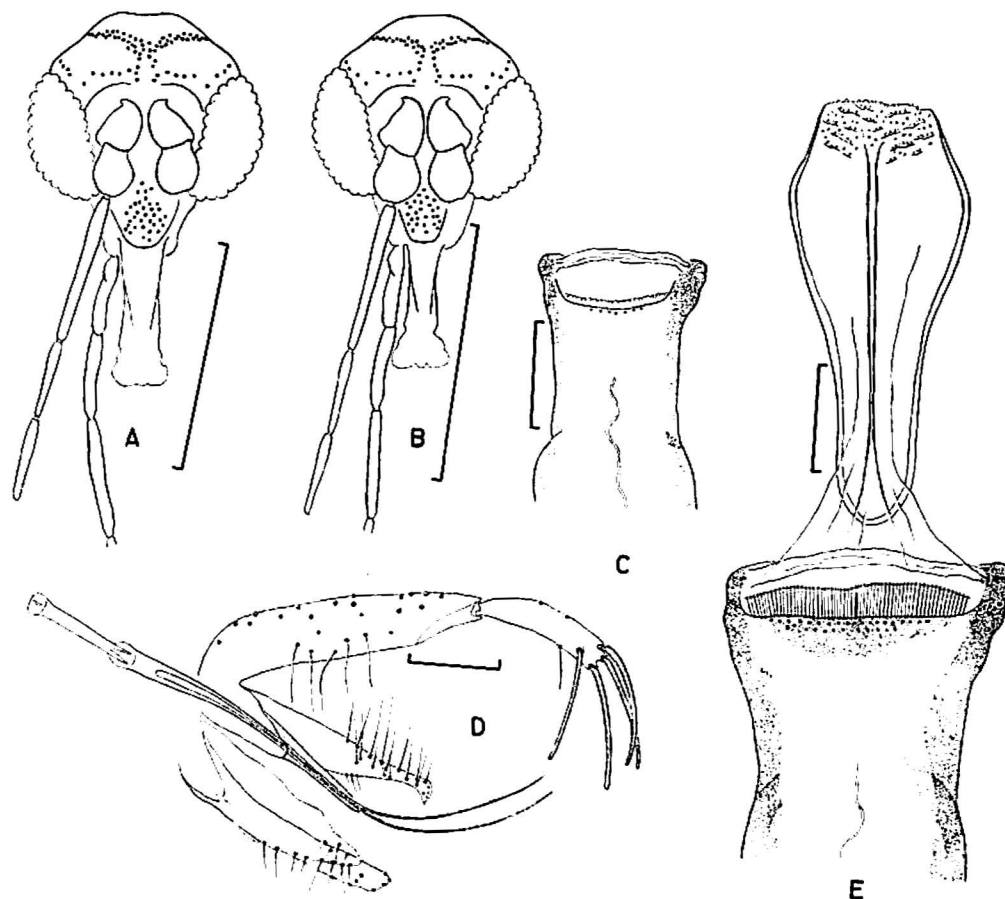


Fig. 11. *Phlebotomus kebarica*: a, ♀ head; b, ♂ head; c, ♂ cibarium; d, ♂ genitalia, lateral; e, ♀ cibarium & pharynx. Scale lines of heads=0.3 mm; others= 0.05 mm.

P. kebarica is similar to *sansaporensis*. The female cibarium of *kebarica* has considerably more teeth than that of *sansaporensis* and also the pleuron of *kebarica* is pale but with brown markings in *sansaporensis*. Males of *sansaporensis* are easily distinguished from *kebarica* by their blunt aedeagal apex. Males of *kebarica* also resemble *quintus* but apparently differ in having a distinct, although faint, pigment patch and lacking the heavy sclerotization found in *quintus*. Males of *kebarica* apparently differ from *noemforensis* in having a larger number of cibarial teeth and longer genital filaments.

16. ***Phlebotomus (Sergentomyia) sansaporensis* Fairchild** Fig. 12.

Phlebotomus sansaporensis Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 207.

Brownish species, pleuron partly pale with nearly all of meso- and lower 1/3 of metasternopleuron and all of scutum brown; cibarium with row of straight, strong teeth, and top-shaped pigment patch; pharynx unarmed; antenna 3 subequal to 4+5.

♀. Cibarium with 24-30 straight, strong teeth in even, comb-like row; 12-16 erect teeth in

not extending to tip of proboscis, subequal to 4+5 and longer than epipharynx; ascoids paired on segment 3-13, single on 14 & 15. Palp 3 shorter than 4, ratio=10:10:14:30, Newstead scales present on 3. Wing with R_{2+3} and R_2 about equal, R_1 overlap usually about 1/2 length of R_2 . Fore femur longer than tibia, ratio=22:19. Spermatheca as illustrated, ovoid.

Antenna 3=0.17-0.20 mm, 4+5=0.17-0.20 mm, epipharynx=0.14-0.16 mm. Wing length=1.47-1.57 mm, width=0.39-0.44.

♂. Similar to ♀. Cibarium similar to ♀ but smaller, sometimes 4-6 erect teeth at midline; pharynx slender. Antenna 3 extending beyond tip of proboscis, ascoids single. Dististyle with 2 apical and 2 subapical spines, accessory seta at 0.8; basistyle with very few nondeciduous hairs; genital filaments 3-4× pump; tergites 5 and 6 subequal.

Antenna 3=0.18-0.22 mm, 4+5=0.19-0.20, epipharynx=0.12-0.13. Wing length=1.24-1.32 mm, width=0.28 mm.

DISTRIBUTION. NE New Guinea, Papua, W New Guinea. Holotype (SPHTM): NW New Guinea, Toem.

NW New Guinea: Hollandia, 23-28.XII.1961, tree hole, L. Quate, 3 ♀♀, 4 ♂♂; same, 24.XI.1958, light trap, J.L. Gressitt, 1 ♀; Kota Nica, 24-29. XII.1961, tree trunk, L. & S. Quate, 2 ♀♀, 3 ♂♂.

This widespread species has a distinctive cibarium which is unlikely to be confused with other species. Although most evident in the females, the cibarial characters are usually well enough developed in the male to permit a ready identification of that sex, too.

15. **Phlebotomus (Sergentomyia) kebarica** Quate and Quate, new species Fig. 11.

Pleuron and coxae pale, scutum brown; cibarium with about 60 teeth in even row and 2 or 3 rows of erect teeth; pharynx unarmed.

♀. Cibarium with 58-62 linear teeth in even, comb-like row, 30-40 erect teeth in 2 or 3 rows, first row regular and other rows irregular; pigment patch top-shaped with slender anterior projection reaching to chitinous arch; chitinous arch well developed but weakened in center; pharynx unarmed, but with small denticles. Antenna 3 not extending to tip of proboscis, little shorter than 4+5 and longer than epipharynx; ascoids paired on segments 3-13, single on 14 and 15, a little more than 1/2 length of 4. Palp 3 considerably shorter than 4, ratio= 10:11:15:30, Newstead scales present on 3. R_{2+3} usually longer than R_2 , R_1 overlap about 1/3 R_2 . Fore femur longer than tibia, ratio=24:21. Spermatheca as illustrated, elongate ovoid.

Antenna 3=0.18 mm (0.17-0.19), 4+5=0.19 mm (0.19-0.20), epipharynx=0.16 mm (0.15-0.17). Wing length=1.57 mm (1.49-1.68), width=0.40 mm (0.36-0.44).

♂. Similar to ♀. Cibarium with 22-28 short, linear teeth in even row and 8-10 erect teeth in single row; pigment patch triangular, faint but visible. Antenna 3 extending to or beyond tip of epipharynx, ascoids single, short, about 1/3 × 4. Dististyle with 2 apical and 2 subapical spines, accessory seta at 0.6; basistyle with few, scattered nondeciduous hairs; paramere with apex strongly beaked; genital filaments 4-5× pump; tergite 5 little larger than 6.

Antenna 3=0.17 mm (0.15-0.19), 4+5=0.19 mm (0.18-0.20), epipharynx=0.12 mm (0.12-0.13). Wing length=1.26 mm (1.15-1.35), width=0.27 mm (0.25-0.30).

Holotype ♀, allotype ♂ (BISHOP 7200): NW New Guinea, Vogelkop, Kebar Val., 22-27. I.1962, Malaise trap and tree base, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 8 ♀♀, 23 ♂♂, same data but 7-30.I.1962.

All specimens of this species were taken in rain forest at lower elevations (550 meters) on shaded tree trunks or in traps in permanently shaded areas.

14. *Phlebotomus* (*Sergentomyia*) *fergusoni* Fairchild Fig. 10.

Phlebotomus fergusoni Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 204.

Pleuron pale, scutum pale laterally and with median brown stripe; cibarium broad, with 4-6 large teeth directed inward towards midline; pharynx unarmed.

♀. Cibarium with 4-6 large triangular teeth lying on angle and directed inward toward midline, compact groups of 2-3 smaller teeth at each side and in center, no erect teeth; pigment patch somewhat hemispherical and posterior median indentation broad, faint anterior projection marked by transverse lines; chitinous arch weak; pharynx relatively small, unarmed. Antenna 3

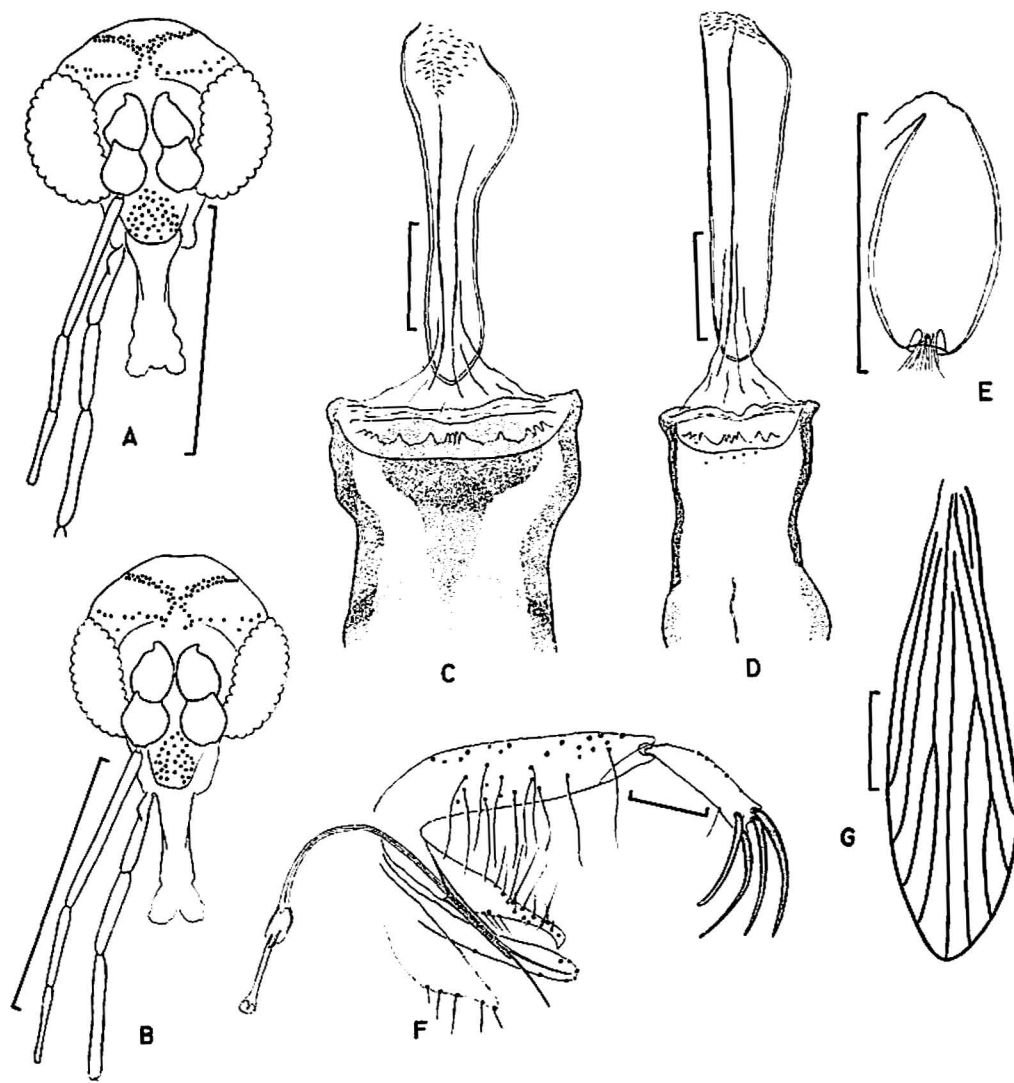


Fig. 10. *Phlebotomus fergusoni*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium & pharynx; e, ♀ spermatheca; f, ♂ genitalia, lateral; g, ♀ wing. Scale lines of head & wing=0.3 mm; others=0.05 mm.

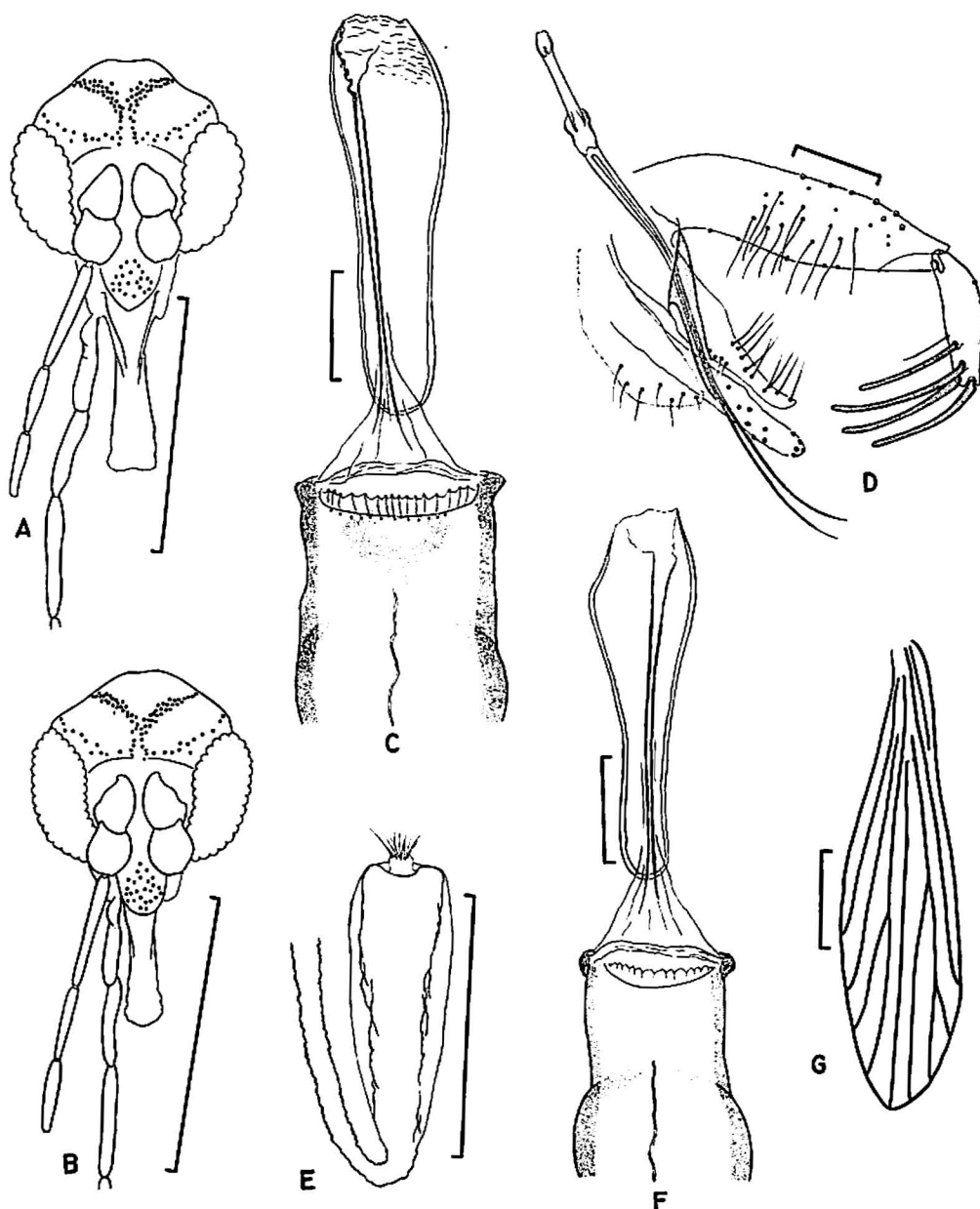


Fig. 9. *Phlebotomus curtartus*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ genitalia, lateral; e, ♀ spermatheca; f, ♂ cibarium & pharynx; g, ♀ wing. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

♂. Similar to ♀. Cibarium with 8–14 strong, straight teeth and usually 6–8 erect teeth; pigment patch not visible. Antenna 3 not extending to tip of epipharynx, ascoids single. Dististyle with 3 apical and 1 subapical spines, accessory seta at 0.7 or 0.8; basistyle with very few nondeciduous hairs, filaments long, 7–8× pump; tergite 5 & 6 subequal.

Antenna 3=0.14 mm (0.14–0.15), 4+5=0.16 mm (0.16–0.17), epipharynx=0.13 mm (0.12–0.14). Wing length=1.17 mm (1.07–1.22), width=0.25 mm (0.20–0.27).

Holotype ♀, allotype ♂ (BISHOP 7198): NW New Guinea, Hollandia, 26.XII.1961, tree trunk, S. Quate. Paratypes (BISHOP, USNM, BMNH): 6 ♀♀, 13 ♂♂, same data, but 25–26.XII.1961, L. & S. Quate.

P. cryptus is closely related to *dolichobysus* and *curtartus*. The females differ rather conspicuously in the cibarial teeth, *cryptus* having far fewer than found in *dolichobysus* and more than in *curtartus*. The males of *cryptus* and *dolichobysus* are similar and difficult to distinguish; the only character we find to be reliable is the different number and shape of the cibarial teeth, 14 or less and well defined in *cryptus*, about 20 and indistinct in *dolichobysus*, but this character is reliable only in mounts with the teeth well positioned. The relative lengths of third antennal segment, the palpal segments, and the long genital filaments are similar in the two species.

13. **Phlebotomus (Sergentomyia) curtartus** Quate, new species Fig. 9.

Pleuron and coxae pale, scutum brown; cibarium with about 15 broad, sharply pointed teeth; pharynx unarmed; antenna 3 very short.

♀. Cibarium with 14–18 broad, pointed teeth; 10 or 11 erect teeth in single row at base of horizontal teeth; pigment patch approximately triangular with rounded posterior border; chitinous arch weak; pharynx unarmed, slender. Antenna 3 very short, ending well before tip of proboscis, shorter than 4+5 and epipharynx; ascoids short, about 1/2× 4, paired on segments 3–13, single on 14 and 15. Palp 3 little shorter than 4, ratio=10:11:13:26, Newstead scales present on 3. Wing with R_2 short, R_{2+3} usually about 2× R_2 , R_1 not extending beyond radial fork or overlap less than 1/2× R_2 . Fore femur little longer than tibia, ratio=21:19. Sphermathecra as illustrated, elongate ovoid.

Antenna 3=0.13 mm (0.12–0.13), 4+5=0.16 mm (0.15–0.16), epipharynx=0.18 mm (0.17–0.18). Wing length=1.50 mm (1.42–1.57), width=0.37 mm (0.35–0.42).

♂. Similar to ♀. Cibarium with 10 teeth similar to ♀ but smaller, no erect teeth evident; pigment patch very faint. Antenna 3 not extending to tip of epipharynx, ascoids single, about 1/4× segment 4. Dististyle with 2 apical, 1 subapical, and 1 spine at 0.8, accessory seta at 0.6; basistyle with very few nondeciduous hairs; paramere bluntly rounded at apex and slightly upturned apically, with heavy spines on dorsal surface; genital filaments 3–4× pump; tergite 5 little larger than 6.

Antenna 3=0.13 mm (0.11–0.14), 4+5=0.15 mm (0.14–0.16), epipharynx=0.14 mm (0.13–0.15). Wing length=1.25 mm (1.17–1.32), width=0.31 mm (0.27–0.35).

Holotype ♀, allotype ♂ (BISHOP 7199): NW New Guinea, Vogelkop, Manokwari, 1.II.1962, tree base, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 3 ♀♀, 17 ♂♂, same data.

Females of *curtartus* are most similar to *cryptus*. The two species differ in the smaller number of cibarial teeth and differently shaped pigment patch in *curtartus*, which are unlikely to be confused. Also, the pleuron of *curtartus* is completely pale, whereas, *cryptus* has some brown on the lower parts. The males of *curtartus* are quite distinctive with the bluntly rounded, heavily spined paramere and the dististyle with one spine well removed from the apex.

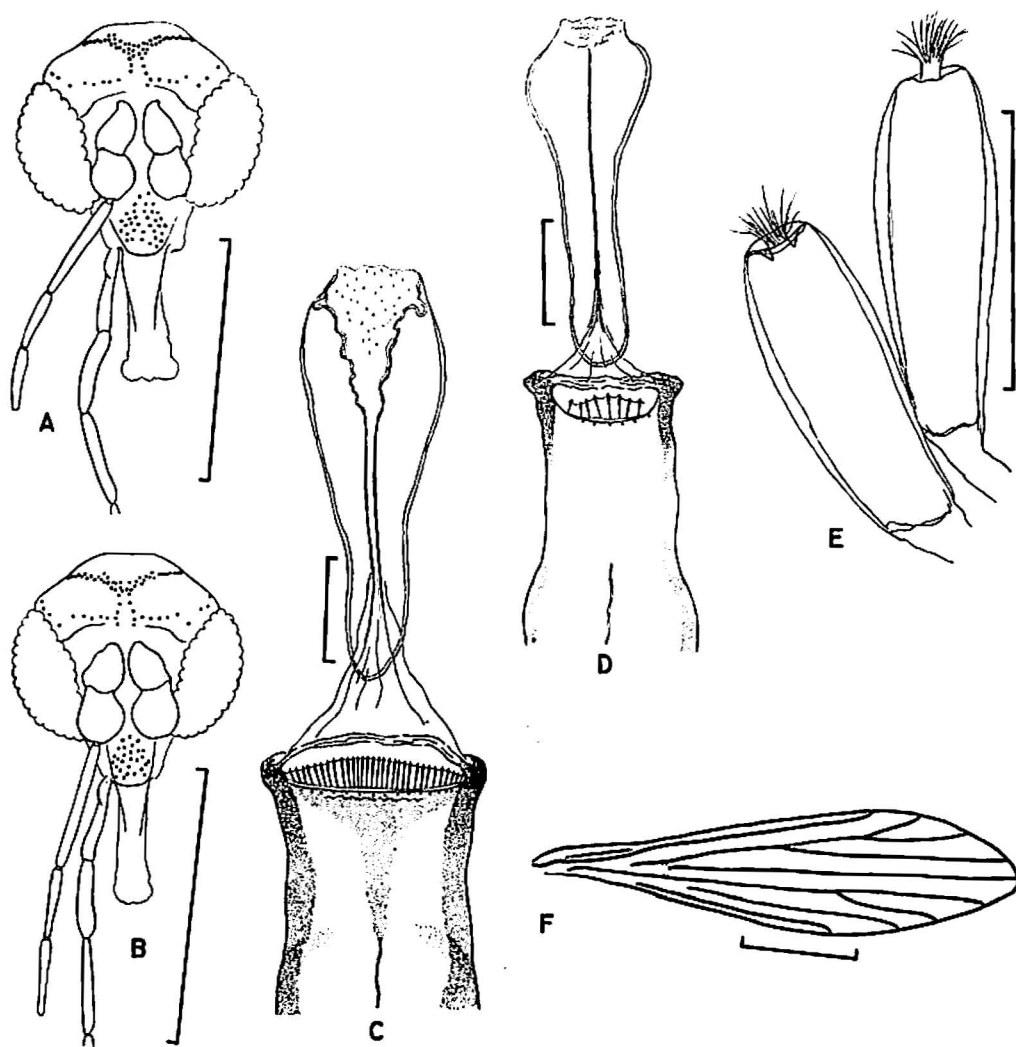


Fig. 8. *Phlebotomus cryptus*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium & pharynx; e, ♀ spermathecae; f, ♀ wing. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

♀. Cibarium with 28–34 strong linear teeth in an even, comb-like row; single even row of about 14 erect teeth close to base of horizontal teeth and an additional row of about 8 indistinct teeth; pigment patch top-shaped with strong anterior projection, which may be cleft at apex; chitinous arch poorly developed; pharynx unarmed, except for minute denticles. Antenna 3 short, not extending to tip of proboscis, shorter than 4 + 5 and epipharynx; ascoids paired on segment 3–13, single on 14 & 15, about 5/7 length of 4. Palp 3 little shorter than 4, ratio=10:10:11:26, Newstead scales present on 3. Wing with R_{2+3} 1.5–2× length of R_2 , R_1 overlap 1/3 or less R_2 . Fore femur longer than tibia, ratio=20:15. Spermatheca as illustrated, cylindrical.

Antenna 3=0.14 mm (0.13–0.15), 4 + 5=0.15 mm (0.13–0.17), epipharynx=0.18 mm (0.16–0.20). Wing length=1.39 mm (1.32–1.56), width=0.34 mm (0.31–0.36).

the larger wing size of our material. The original description states that there is some doubt about the accuracy of measurement of the wing length and in view of the concordance of other characters it is assumed that the wings of the type are actually longer than that measured by Fairchild (*l.c.*) Our series show some variation in the number of teeth in the cibarium, there being 1, 2 or 3 large central teeth rather than 2 as stated by Fairchild (*l.c.*), but this variation does not seem significant.

The cibarial teeth of *brachycornutus* are somewhat similar to *fergusoni*, but the large, strong chitinous arch and shorter third antennal segment readily separate the former from the latter. There are no other known species in New Guinea with which *brachycornutus* might be confused.

11. **Phlebotomus (Sergentomyia) dolichobyssus** Fairchild Fig. 7.

Phlebotomus dolichobyssus Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 202.

Pleuron pale with brown on lower parts of meso- and metasternopleuron; pharynx unarmed, cibarium with dark, top-shaped pigment patch and numerous, fine, linear teeth; antenna 3 subequal to 4+5.

♀. Cibarium with 130-150 fine, linear teeth in comb-like row (difficult to count accurately); single row of about 25 erect teeth and additional row of indistinct or ill-formed erect teeth basad of row at base of horizontal teeth; pigment patch dark, top-shaped, anterior projection sometimes cleft at tip; chitinous arch apparently absent; pharynx unarmed distally. Antenna 3 not extending to tip of proboscis, subequal to 4+5 and shorter than epipharynx; ascoids paired on 3-13, single on 14, 15, 4/7 × length of segment 4. Palp 3 a little shorter than 4, ratio=10:10:11:27, Newstead scales on 3. R_{2+3} about $1.5 \times R_2$, R_1 overlap about $1/3 R_2$. Fore femur longer than tibia, ratio=20:15. Spermatheca as illustrated, ovoid.

Antenna 3=0.14 mm (0.13-0.16), 4+5=0.15 mm (0.14-0.16), epipharynx=0.18 mm (0.17-0.18). Wing length=1.33 mm (1.27-1.45), width=0.31 mm (0.25-0.34).

♂. Similar to ♀. Cibarium with 20 or more indistinct teeth appearing either granular or straight, erect teeth not evident; pigment patch absent. Antenna 3 not extending to tip of epipharynx, ascoids single. Dististyle with 2 apical and 2 subapical spines, accessory seta 0.7; basistyle with very few nondeciduous hairs; genital filaments very long, 10-11 × length of pump; paramere slightly beaked at apex; tergite 5 little larger than 6.

Antenna 3=0.13-0.15 mm, 4+5=0.15-0.16 mm, epipharynx=0.12-0.13 mm. Wing length=1.17-1.22 mm, width=0.22 mm.

Types (SPHTM): NW New Guinea, Hollandia.

NW NEW GUINEA: Hollandia, 26-28.XII.1961, tree-trunks, Kota Nica, 24-29.XII.1961, L. & S. Quate, 6 ♀♀, 3 ♂♂.

The specimens studied agree well with the original description of *dolichobyssus* except for the pharynx of the specimens which are lampglass-shaped and Fairchild's (*l.c.*) illustrations which show a pharynx appearing to be nearly straight-sided. Since our specimens agree in all other respects and are from the same locality as the original material, we assume that the original illustration may have been based on a specimen in which the pharynx was distorted.

The large number of fine cibarial teeth in combination with the rather short third antennal segment readily separates the females of *dolichobyssus* from other New Guinea *Phlebotomus*. Males, with their very long genital filaments, are also distinctive and might be confused only with the following species, from which *dolichobyssus* differs in the larger number of and differently shaped cibarial teeth.

12. **Phlebotomus (Sergentomyia) cryptus** Quate and Quate, new species Fig. 8.

Pleuron largely pale but lower parts of meso- and metasternopleuron pale brown, scutum brown; cibarium with about 30 strong teeth; pharynx unarmed; antenna 3 little shorter than 4+5.

Holotype (SPHTM): NW New Guinea, Toem.

NW NEW GUINEA: Vogelkop, Kebar Val., 24-27.I.1962, Malaise trap, L. & S. Quate, 4 ♀♀; Geelvink Bay, Nabire, 2-9.VII.1962, light trap, J.L. Gressitt and J. Sedlacek, 1 ♀.

The above specimens agree well with Fairchild's (*l.c.*) description of *brachycornutus*, except for

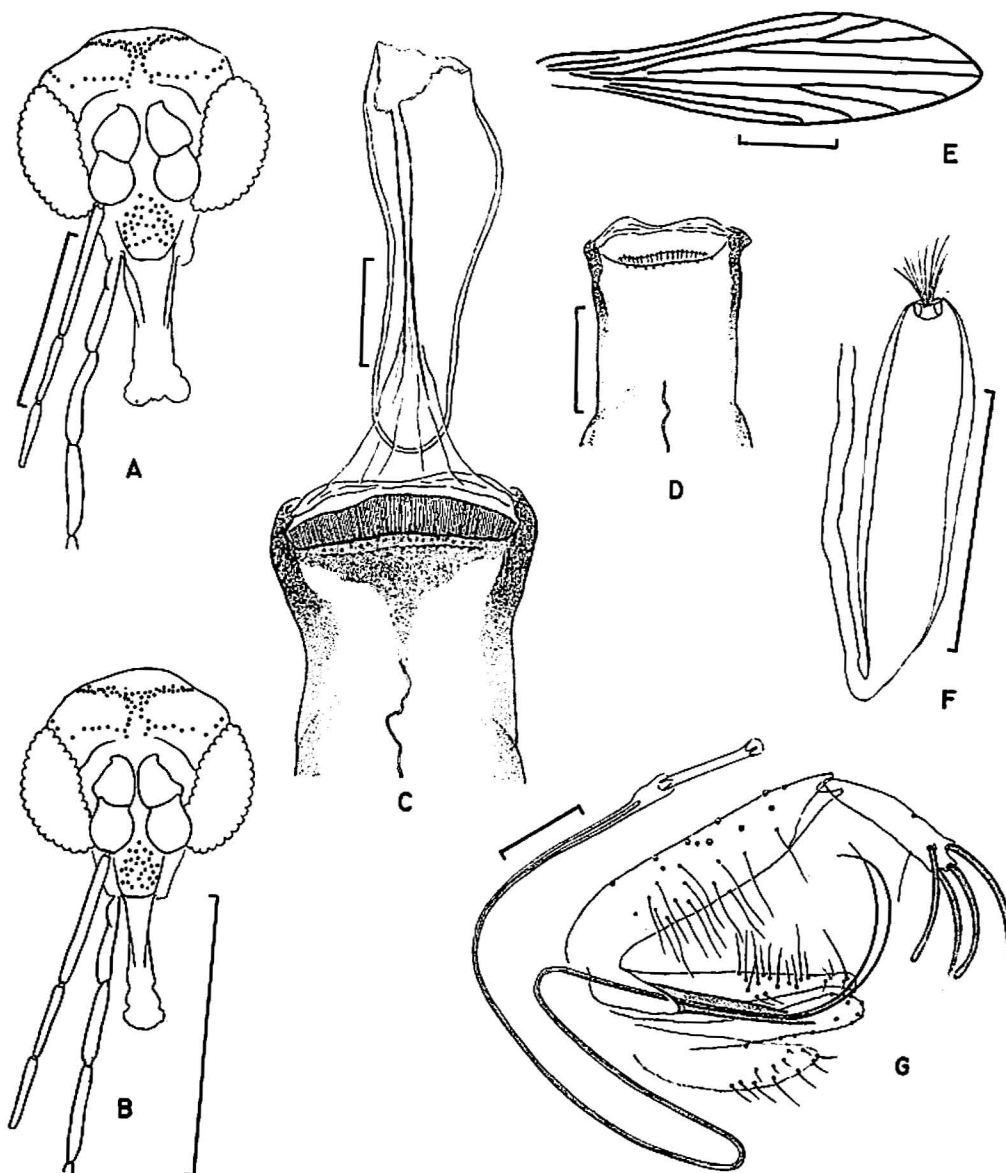


Fig. 7. *Phlebotomus dolichobysus*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium; e, ♀ wing; f, ♀ spermatheca & duct; g, ♂ genitalia, lateral. Scale lines of heads & wing = 0.3 mm; others = 0.05 mm.

9. **Phlebotomus (Sergentomyia) cidarius** Quate and Quate, new species Fig. 6a-f.

Moderately large, pale species, pleuron and sides of scutum pale, midline of scutum brown, fore coxa little darker than mid and hind; pharynx essentially unarmed; antenna 3 long, extending well beyond tip of proboscis.

♀. Cibarium with 22-24 spike-like teeth in crown-like row; 20-24 erect teeth in a single row at base of horizontal teeth; pigment patch indistinguishable (see discussion); chitinous arch well developed; pharynx essentially unarmed, but with few small, faint spines. Antenna 3 long, extending beyond tip of proboscis, longer than 4+5 and epipharynx; ascoids short, about $1/3 \times 4$, paired on segments 3-14, single on 15. Palp 3 little shorter than 4, ratio=12:13:15:35, Newstead scales present on 3. Wing with R_{2+3} longer or equal to R_2 , R_1 overlap about $1/2 R_2$. Fore femur little longer than tibia, ratio=28:26. Spermatheca ovoid, smooth-walled.

Antenna 3=0.27 mm, 4+5=0.22 mm, epipharynx=0.17 mm. Wing length=1.60-1.77, width=0.45 mm.

♂. Similar to ♀. Cibarium with 14 short teeth and 10 erect teeth; pharynx slender, not lamp-glass-shaped, without spines. Antenna 3 extending beyond tip of proboscis, ascoids single. Dististyle with 2 apical and 2 subapical spines, accessory seta at 0.7; basistyle with very few nondeciduous hairs; paramere beaked at apex, genital filaments $4 \times$ pump; tergite 5 little larger than 6.

Antenna=0.24-0.27 mm, 4+5=0.22-0.23 mm, epipharynx=0.14-0.15 mm. Wing length=1.40-1.45 mm, width=0.35-0.37 mm.

Holotype ♀ (BISHOP 7197): Papua: Murua, 17-22. XII.1964, Malaise trap, W.A. Steffan. Allotype ♂ (BISHOP): NE New Guinea, Morobe Dist, 15 km W of Lae, 17.IV.1965, Malaise trap, W.A. Steffan. Paratype (BISHOP): 1 ♀, 1 ♂, same data as allotype.

One other female from Murua, collected on the same date as the holotype, probably also belongs to this species. It agrees well in all characters except for a large teardrop-shaped pigment patch which is very well defined. In the paratype female there is a very faint indication of a pigment patch but it is completely indistinguishable in the holotype. Perhaps a pigment patch is present in this species, but has been lost in the mounting of the types.

This species might be confused with *hoogstraali* or *vanellus*. The group of erect teeth on each side of the pigment patch in *hoogstraali* will separate that species from *cidarius*. The prominent pigment patch in *vanellus* will separate that species, even if *cidarius* should prove to have a pigment patch as indicated by the above specimen.

10. **Phlebotomus (Sergentomyia) brachycornutus** Fairchild Fig. 6g-h.

Phlebotomus brachycornutus Fairchild, 1952, Proc. Linn. Soc. N.S.W. 77: 204.

Pleuron largely pale but lower parts of meso- and metasternopleuron pale brown, scutum brown; pharynx unarmed; antenna 3 short.

♀. Cibarium with 1, 2 or 3 isolated, triangular teeth in center and 2-3 smaller compact ones on each side, no erect teeth, sides of cibarium attenuate and outspread at apices; pigment patch absent; chitinous arch large, well developed; pharynx rather slender, unarmed. Antenna 3 short, little shorter than 4+5 and epipharynx; ascoids paired on segment 3-13, single on 14 and 15, $1/2$ length of 4. Palp 3 shorter than 4, ratio=9:9:13:26, Newstead scales present on 3. Wing with R_{2+3} much longer than R_2 , usually $2 \times$, R_1 short, $1/2$ or less R_2 . Fore femur longer than tibia, ratio=55:45. Spermatheca as illustrated, ovoid.

Antenna 3=0.13-0.14 mm, 4+5=0.14-0.15 mm, epipharynx=0.15-0.16 mm. Wing length=1.37-1.50 mm, width=0.32-0.37 mm.

♂. Unknown.

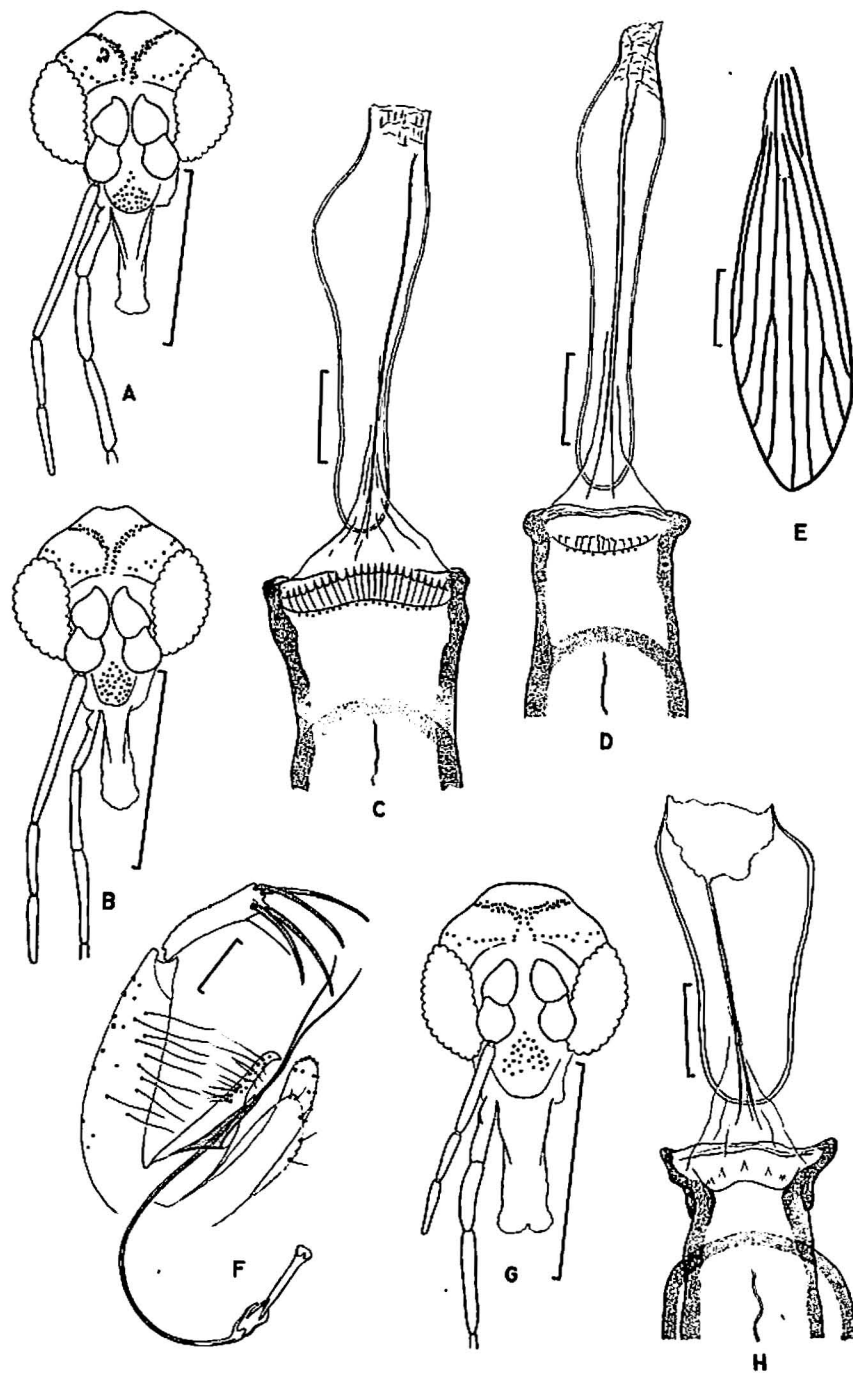


Fig. 6. a-f, *Phlebotomus cidarius*: a, ♀ head; b, ♂ head; c, ♀ cibarium & pharynx; d, ♂ cibarium & pharynx; e, ♀ wing; f, ♂ genitalia, lateral. g-h, *Phlebotomus brachycornutus*, ♀: g, head; h, cibarium & pharynx. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

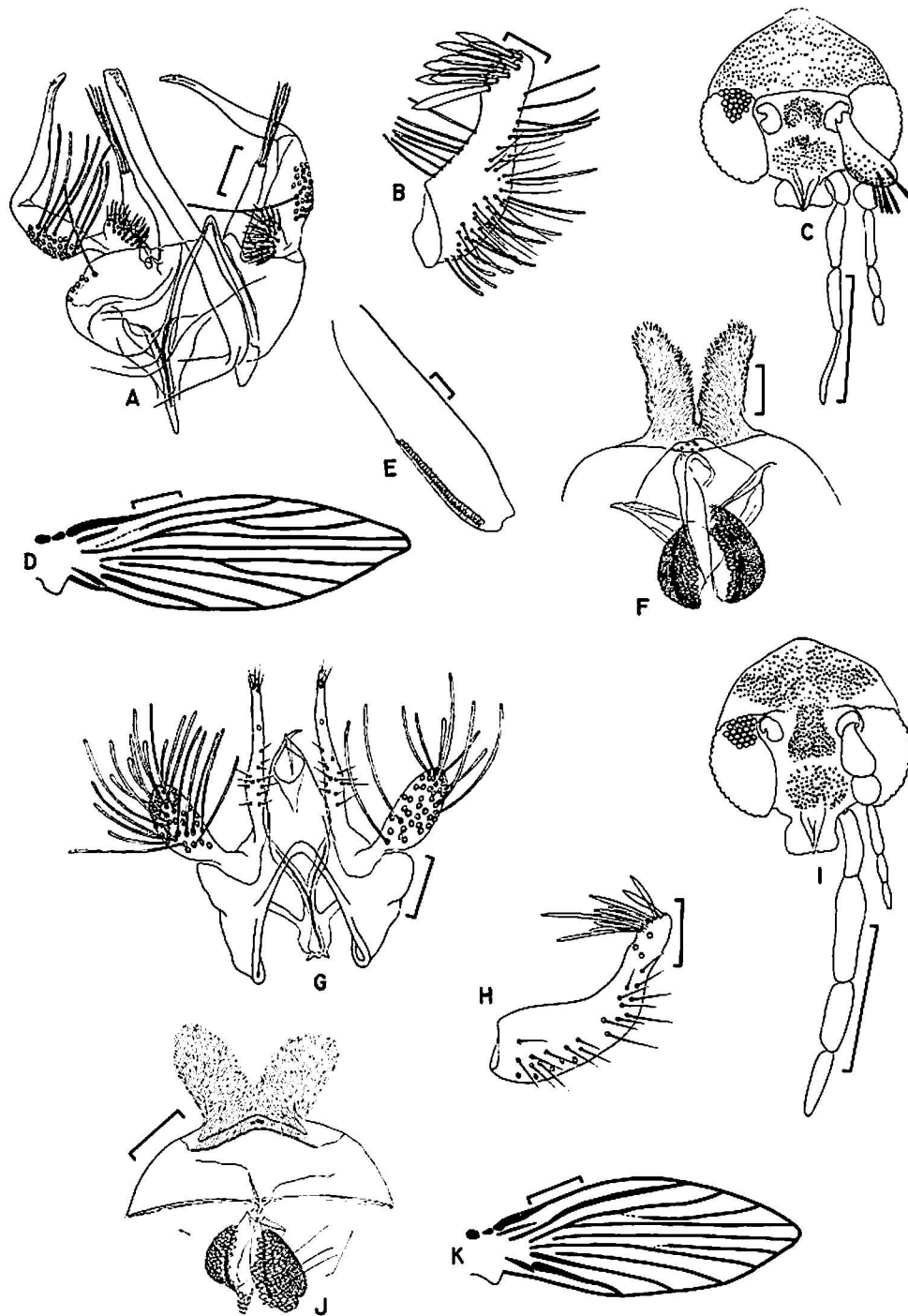


Fig. 17. a-f, *Notiocharis maai*: a, ♂ genitalia, dorsal; b, ♂ surstyle; c, ♂ head; d, ♂ wing; e, ♂ fore femur; f, ♀ genitalia. g-k, *Notiocharis fragilis*: g, ♂ genitalia, dorsal; h, ♂ surstyle; i, ♂ head; j, ♀ genitalia; k, ♂ wing. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

Inner lobe of ♂ dististyle straight, aedeagus broad and bladelike with short, basal stem;
lobes of ♀ subgenital plate broadly joined at base.....34. **phlyctis**

27. **Notiocharis maai** Quate and Quate, new species Fig. 17 a-f.

♂. Interocular suture nearly straight, without arch in center; occiput elevated and truncate; palpus 2 and 3 subequal, ratio=9:15:15(14):18. Antenna with scape enlarged and asymmetrical, apicolateral area expanded and hence pedicel arises preapically; flagellar segment 1 little longer than 2+3 combined. Wing with membrane pale and unpatterned; radial and medial forks on same level; tip of Cu well before forks. Fore femur with striated groove over distal 1/2 of anterior surface. Genitalia as figured; outer lobe of dististyle with short, rounded projection at base covered with spines; inner lobe of dististyle nearly straight and a little sinuous, bearing 5 long spines at apex; aedeagus slender and tubular, base strongly curved ventrally; surstyle unmodified, bearing about 10 tenacula.

Antenna=0.86 mm, wing length=2.12-2.27 mm, width=0.67-0.72 mm.

♀. Similar to ♂; occiput not as strongly protuberant as in ♂; scape of antenna unmodified; fore femur without groove. Genitalia as figured; lobes of subgenital plate long and slender, merely touching on midline; spermatheca coarsely reticulate over most of surface.

Wing length=2.12-2.17 mm, width=0.62-0.67 mm.

Holotype ♂, allotype ♀ (BISHOP 7209): SW New Guinea, Fak-Fak, Bomberi, 4-7.VI.1959, T.C. Maa. Paratypes (BISHOP, USNM): 5 ♂♂, 1 ♀, same data as types.

The modified, enlarged scape of the male antenna, the rounded protuberance at the base of the male dististyle, and the slender lobes of the female subgenital plate are features which most readily distinguish *maai* from other New Guinea species of *Notiocharis*.

We are pleased to have the opportunity to dedicate this unusual species to Prof. T.C. Maa to signify our respect for him and for the many contributions he has made to systematic entomology.

28. **Notiocharis fragilis** Quate and Quate, new species Fig. 17 g-k.

♂. Interocular suture straight on sides and arched and weakened in center; frons with wide band of hair extending nearly to suture; occiput slightly elevated and rounded at apex; palpus 2 and 3 enlarged, 2 much longer than 3, ratio of segments=13:20:15:13.

Antenna with scape normal, 2× pedicel; flagellar segment 1 subequal to 2+3 combined. Wing membrane infuscate but not with definite pattern; radial fork basad of medial; Cu tip nearly on level of radial fork. Genitalia as figured; outer lobe of dististyle 1-segmented, a saccular lobe; inner lobe of dististyle longer and slender, extending well beyond outer lobe, bearing 4 short bristles preapically; aedeagus spindle-shaped with slender basal extension and acute apical extension; surstyle enlarged basally and slender apically, with about 12 tenacula.

Wing length=1.60 mm (1.52-1.67), width=0.57 mm (0.55-0.60).

♀. Similar to ♂; palpus 2 and 3 not enlarged. Genitalia as figured; lobes of subgenital plate broadly joined at base; spermatheca strongly reticulate over most of surface.

Wing length=2.12-2.17 mm, width=0.62-0.67 mm.

Holotype ♂, allotype ♀ (BISHOP 7210); SW New Guinea, Fak-Fak, Bomberi, 4-7.VI.1959, T.C. Maa. Paratypes (BISHOP, USNM, BMNH, CSIRO): 10 ♂♂, 1 ♀, same data as types.

29. **Notiocharis miranda** Quate and Quate, new species Fig. 18a-d.

♂. Interocular suture nearly straight, separated and slightly arched in center; occiput elevated and bilobed; palpus 2 and 3 enlarged, 2 much longer than 3, ratio=10:24:17:20. Antenna with scape 1.5× pedicel; flagellar segment 1 considerably longer than 2+3 combined. Wing rather short, membrane without conspicuous pattern; radial fork basad of medial and close to base of R₄,

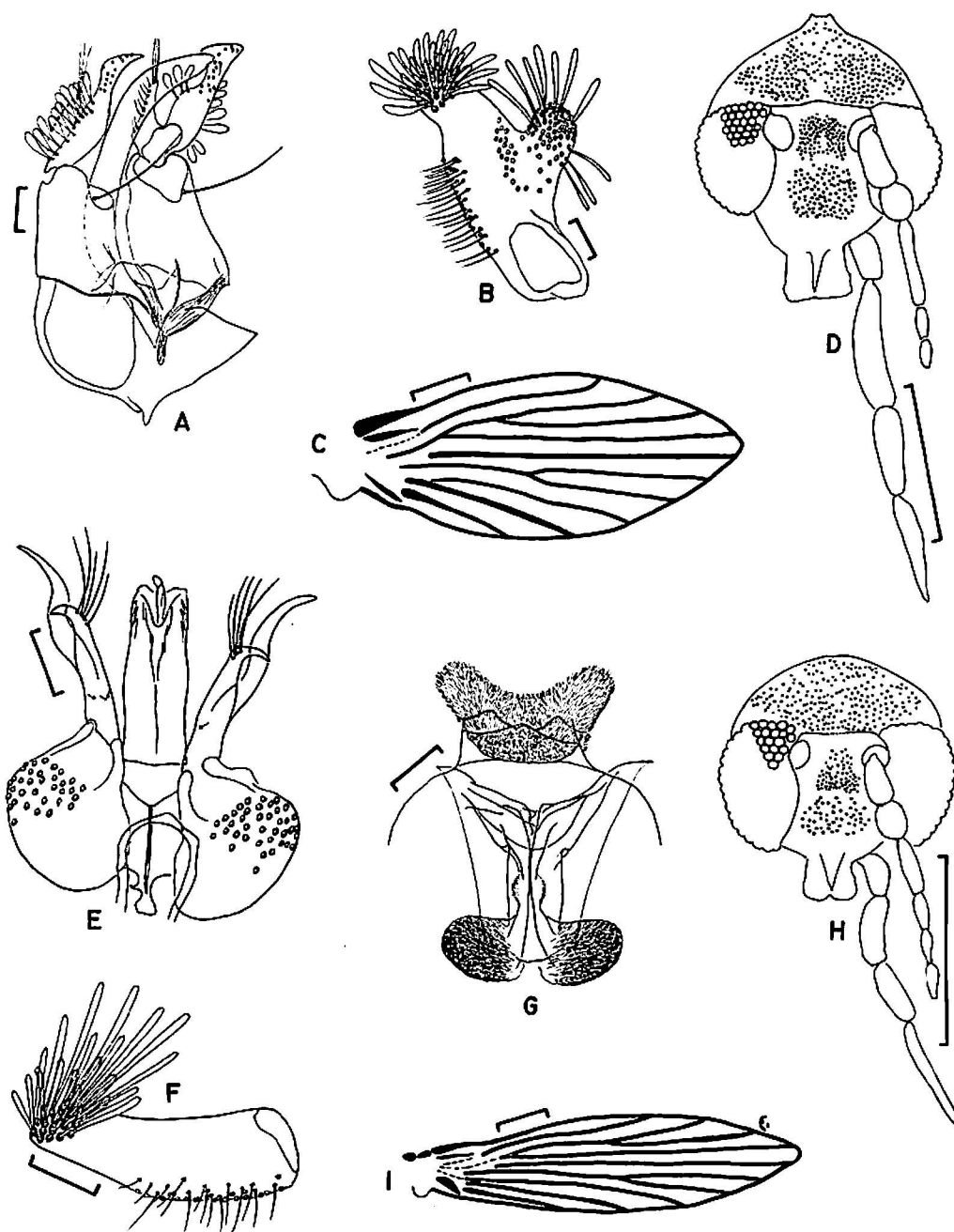


Fig. 18. a-d, *Notiocharis miranda*, ♂: a, genitalia, dorsal; b, surstyle; c, wing; d, head. e-i, *Notiocharis lanceolata*: e, ♂ genitalia, dorsal; f, ♂ surstyle; g, ♀ genitalia; h, ♂ head; i, ♂ wing. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

hence R_{2+3} much longer than R_2 ; Cu ending little basad of radial fork. Abdominal segment 7 with dense, long brush of bristles in pleural area, slender, darkly sclerotized, serrate band passing over tergum in front of brushes; genitalia as figured; dististyle curiously modified, inner lobe short and straight, outer lobe with preapical indentation and apex beak-like; aedeagus blade-like; surstyle enlarged basally and with large, globular, hairy lobe, apex with nearly 30 tenacula.

Antenna=0.82 mm, wing length=2.00 mm, width=0.77.

♀ Unknown.

Holotype ♂ (BISHOP 7211): NE New Guinea, Tsigmil, 24 km E of Minj, 1600 m, 25.VI.1957, D.E. Hardy.

This is an unusual species which has a number of characters divergent from those normally found in *Notiocharis*. The wing venation and enlarged palpus are different from most other species, but the male genitalia is most unusual, particularly the peculiar dististyle and the lobed surstyle. However, the relationships of *miranda* and other *Notiocharis* is clearly shown by the lack of eye bridges and the 12-segmented male antenna.

30. **Notiocharis lanceolata** Quate and Quate, new species Fig. 18e-i.

♂. Interocular suture straight and weakened in center; occiput slightly elevated postapically; frons with hair patch ending well before suture; ratio of palpal segments=7:11:10:17. Antenna with scape unmodified, little longer than pedicel; flagellar segment 1 shorter than 2+3 combined. Wing slender and lanceolate, membrane pale; radial and medial forks on same level or radial little basad of medial; Cu ending far basad of forks. Genitalia as figured; outer lobe of dististyle slender and sinuous, inner lobe straight and pressed close to outer lobe; aedeagus broad with acute, preapical point; surstyle of usual shape, with numerous tenacula, lobe between surstyle elongate conical and extends nearly to tip of surstyle.

Antenna=0.67 mm, wing length=2.12–2.17 mm, width=0.52–0.57 mm.

♀. Similar to ♂. Genitalia as figured; apex of subgenital plate concave; spermatheca sclerotized, surface rugose.

Antenna=0.70–0.71 mm, wing length=1.67–1.80 mm, wing width=0.47 mm.

Holotype ♂, allotype ♀ (BISHOP 7212): NW New Guinea, Hollandia-Binnen, 100 m, 1.XI.1958, J.L. Gressitt. Paratypes (BISHOP): 3 ♂♂, 2 ♀♀, same data as types; NE New Guinea, 1 ♀, 15 km W of Lae, 22. IV.1965, Malaise trap, Y.M. Huang & W.A. Steffan; 1 ♀, Baitabag, 1.XII.1964, W.A. Steffan; 1 ♀, Papua, Murua, 10.XII.1964, Malaise trap, W.A. Steffan.

31. **Notiocharis assimilis** Quate and Quate, new species Fig. 19a-d.

♂. Interocular suture very slightly arched in center; occiput a little elevated at apex; frons covered with band of hairs which extends almost to suture; ratio of palpal segments=6:10:10:15. Antenna with scape 1.5× pedicel; flagellar segment 1 much shorter than 2+3 combined. Wing membrane pale but with darkened spots on vein R_2 and M_3 beyond forks and apical part of M_4 ; forks on same level; Cu very short, ending far basad of forks. Genitalia as figured; inner lobe of dististyle short and with 3 long, preapical bristles; outer lobe of dististyle with patch of blunt bristles on inner face at base; aedeagus broad and ending in acute, prolonged point; surstyle rather short, of usual shape, with about 10 short tenacula.

Antenna=0.67 mm, wing length=1.75 mm, width=0.55 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7213): NW New Guinea, Hollandia-Binnen, 100 m, 1.XI.1958, J.L. Gressitt.

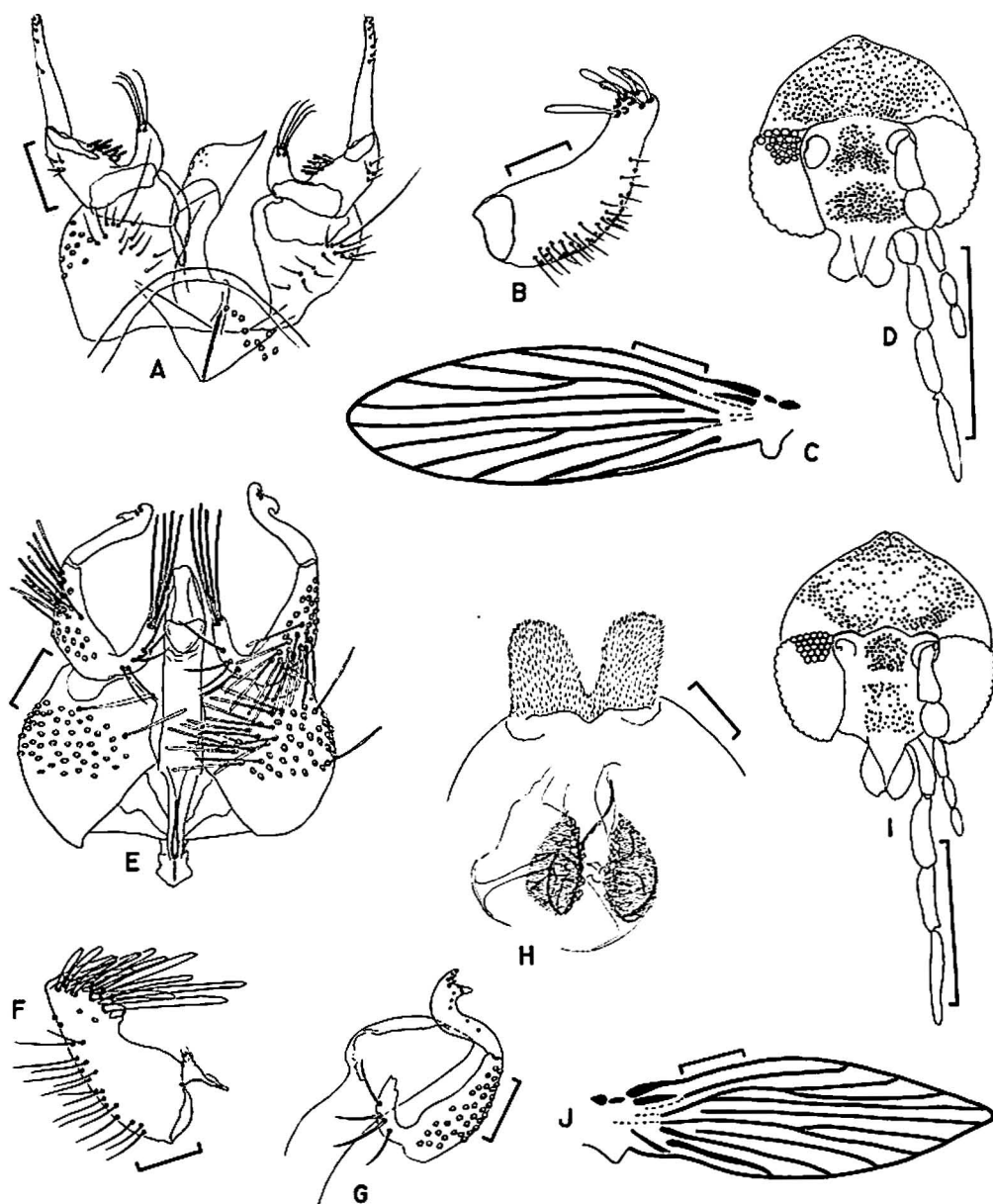


Fig. 19. a-d, *Notiocharis assimilis*, ♂: a, genitalia, dorsal; b, surstyle; c, wing; d, head. e-j, *Notiocharis papuensis*: e, ♂ genitalia, dorsal; f, ♂ surstyle; g, ♂ dististyle & aedeagus tip; h, ♂ head; i, ♂ head; j, ♂ wing. Scale lines of head & wings=0.3 mm; others=0.05 mm.

32. **Notiocharis papuensis** Quate and Quate, new species Fig. 19e-j.

♂. Interocular suture weakened and arched in center; occiput elevated and bilobed; hair patch on frons rectangular and extending nearly to suture; ratio of palpal segments=10:12:11:16. Antenna with scape nearly 2× pedicel; flagellar segment 1 short, much less than combined length of 2+3. Wing membrane infusate; radial fork little basad of medial; Cu ending nearly at level of radial fork; apex acute and R_5 ending little beyond apex. Genitalia as illustrated; inner lobe of dististyle with 3 long apical bristles and several shorter bristles distributed along dorsal face; apex of distal segment of outer lobe ending in apical and preapical recurved points; aedeagus straight-sided and tubular in dorsal view but in lateral view dorsal surface expanded beyond center; surstyle short and thick, bearing many tenacula.

Antenna=0.66 mm (0.59–0.71), wing length=1.78 mm (1.62–1.90), width=0.54 mm (0.50–0.60).

♀. Similar to ♂. Genitalia as figured; lobes of subgenital plate narrowly connected at base; spermatheca reticulate over most of surface.

Antenna=0.71–0.76 mm, wing length=1.77–2.02 mm, width=0.55–0.60 mm.

Holotype ♂, allotype ♀ (BISHOP 7214): NE New Guinea, Wau, 1450 m, 20.XII.1961, L. & S. Quate. Paratypes (BISHOP, USNM, ANMH, BMNH, CSIRO): 94 ♂♂, 6 ♀♀, same data as types.

33. **Notiocharis stellae** Quate, 1962, Pac. Ins. 4: 33 (descr., illus.); 1965, *ibid.* 7: 848 (illus.). DISTRIBUTION. Philippines, Borneo, New Guinea.

PAPUA: Murua, 10.XII.1964, W.A. Steffan, 1 ♂, 4 ♀♀.

NE NEW GUINEA: Baitabag, 1.XII.1964, Steffan, 4 ♂♂, 2 ♀♀; Maprik area, 26.VIII.1957, D.E. Hardy, 1 ♂.

34. **Notiocharis phlyctis** Quate and Quate, new species Fig. 20a-e.

♂. Interocular suture weakened and arched in center; occiput projecting into apical point; hairs on frons sparse, well separated from suture; ratio of palpal segment=7:10:10:15. Antenna with scape 2× pedicel; flagellar segment 1 little longer than 2+3 combined. Wing membrane infusate, darker in costal cell and at vein tips; radial fork well basad of medial; Cu ending before forks. Abdominal segment 7 with brush of long, soft hairs on pleural area. Genitalia as figured; inner lobe of dististyle digitiform, with 3 apical bristles, 2 preapical and 3 at center; outer lobe of dististyle slender with patch of 5 bristles at apex of basal segment; aedeagus blade-like, curved when viewed in lateral view; surstyle inflated, irregularly ovoid, with 3 spatulate tenacula and group of scales on dorsal surface, small saccular, rugose lobe attached to base of each surstyle.

Antenna=0.52 mm (0.58–0.66), wing length=1.56 mm (1.45–1.70), width=0.50 mm (0.45–0.55).

♀. Similar to ♂; abdomen without brush of bristles on segment 8. Genitalia as figured; apical lobes joined at base.

Antenna=0.66–0.70 mm, wing length=1.57–1.85 mm, width=0.47–0.55 mm.

Holotype ♂, allotype ♀ (BISHOP 7215): NW New Guinea, Sibil Val., 1245 m, 18.X–8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, ANMH, BMNH, CSIRO): 14 ♂♂, 4 ♀♀, same data as types; 74 ♂♂, 4 ♀♀, NW New Guinea, Wissel Lakes, Enarotali, 1830 m, 18–23.VII.1962, N. Wilson.

35. **Notiocharis paxillosa** Quate and Quate, new species Fig. 20 f-k.

♂. Interocular suture weakened and arched in center; occiput rounded and not projecting; hair patch on frons narrowing posteriorly and ending before suture; ratio of palpal segments=8:13:12:16. Antenna with scape 2× pedicel; flagellar segment 1 short, shorter than 2+3 combin-

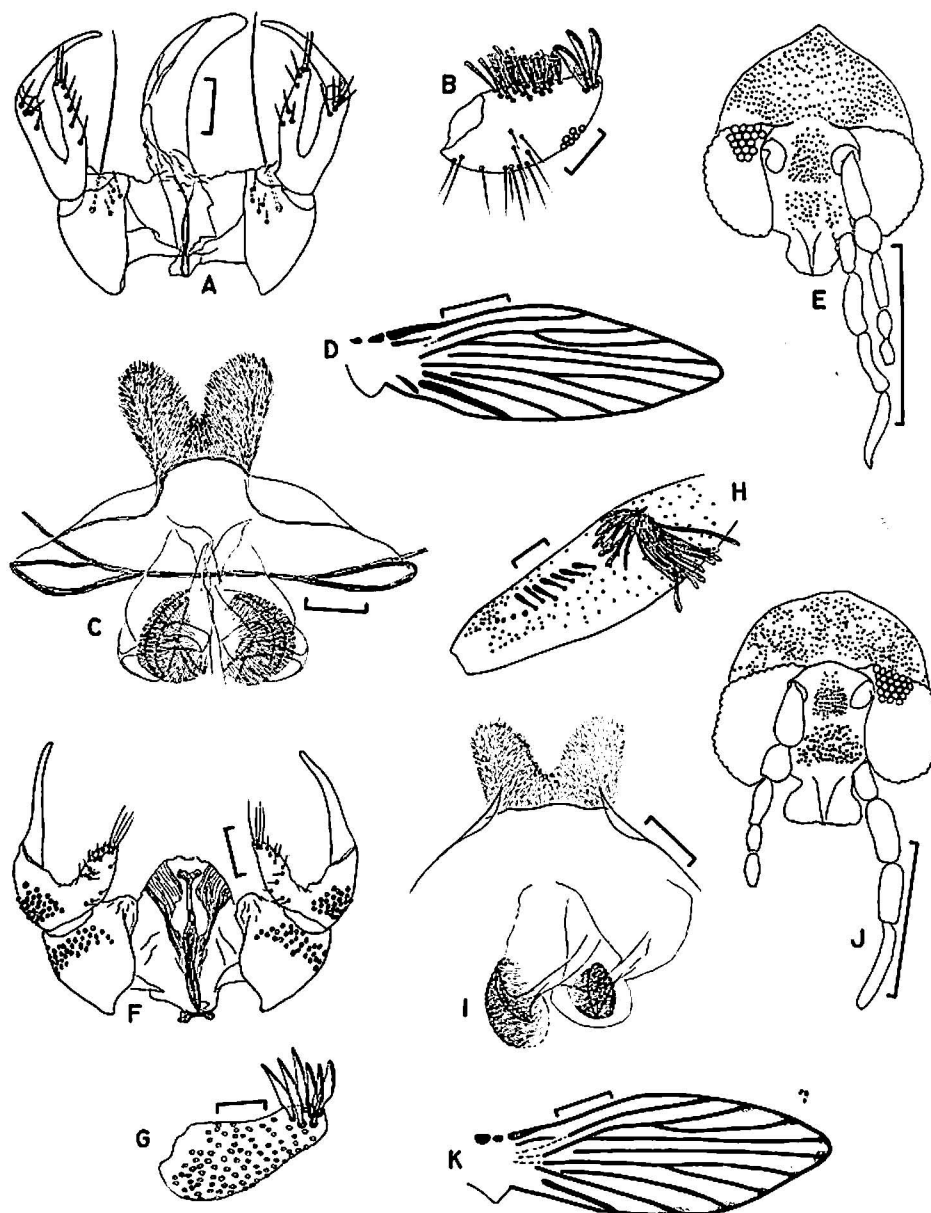


Fig. 20, a-e, *Notiocharis phlyctis*: a, ♂ genitalia, dorsal; b, ♂ surstyle; c, ♀ genitalia; d, ♂ wing; e, ♂ head. f-k, *Notiocharis paxillosa*: f, ♂ genitalia, dorsal; g, ♂ surstyle; h, ♂ fore femur; i, ♀ genitalia; j, ♂ head; k, ♂ wing. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

ed. Fore femur with row of about 10 blunt bristles on inner face over distal 1/2, basad of bristles is brush of long soft bristles. Wing membrane with infuscated spots at wing tips, veins R_2 and M_3 with enlarged section beyond level of forks; radial and medial forks nearly on same level; Cu enlarged apically, ending well before forks. Genitalia as figured; inner lobe of dististyle short and tapering to acute apex, with 3 long apical bristles and irregular double row of short spines along dorsal surface; outer lobe broad basally and with slender distal segment; aedeagus somewhat lyre-shaped; surstyle short and thick, with 5 tenacula.

Antenna=0.67-0.74 mm, wing length=1.76 mm (1.62-1.85), width=0.59 mm (0.55-0.62).

♀. Similar to ♂; fore femur without bristles or brush. Genitalia as figured; lobes of subgenital plate broadly joined at base.

Antenna=0.70-0.71 mm, wing length=1.87-1.95 mm, width=0.62-0.65 mm.

Holotype ♂, allotype ♀ (BISHOP 7216): NW New Guinea, Wissel Lakes, Enarotali, 1830 m, 18-23. VII.1962, N. Wilson. Paratypes (BISHOP, USNM, ANMH, BMNH, CSIRO): 10 ♂♂, 2 ♀♀, same data as types.

Genus *Paratelmatoscopus* Satchell 1953

Type-species. *Telmatoscopus variegatus* Satchell, by orig. design.

Range. Malaya, Borneo, New Guinea, Australia.

KEY TO NEW GUINEA SPECIES OF PARATELMATOSCOPIUS

1. Interocular suture inverted Y-shaped in center, with definite sulcus on midline extending on vertex.....2
Interocular suture concave in center and without median sulcus.....36. **permistus**
2. Palpus 2 longer than 4 3
Palpus 2 shorter than 4; nodes of basal flagellar segments absent or very short; a dark brown species37. **nitidus**
3. Larger species, wing length 1.9 mm or more; ♂ surstyle longer than basistyle38. **impigrus**
Smaller species, wing length 1.8 mm or less; ♂ surstyle short, shorter than basistyle39. **similis**

36. *Paratelmatoscopus permistus* Quate and Quate, new species Fig. 21 a-c.

♂. Interocular suture concave in center; occiput with truncate, dome-like projection at apex; frons with hair patch not extending above base of antenna; palpus with segments 2 and 4 subequal, ratio=5:12:10:12. Antenna with scape about 1.5× pedicel; 1st flagellar segment small, globular and without internode, following segments strongly nodiform with well developed internodes, terminal segment with apiculus shorter than node; ascoids long and spiraliform. Wing rather slender; radial fork well distad of R_4 base. Fore femur longer than tibia. Genitalia as figured; dististyle slender and sinuous, with few short setae at apex; aedeagus slender, paramere with deep concavity in center; surstyle short, shorter than basistyle.

Antenna=0.97 mm, wing length=1.60 mm, width=0.57 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7217): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, L. & S. Quate.

37. *Paratelmatoscopus nitidus* Quate and Quate, new species Fig. 21d-g.

♂. Interocular suture inverted Y-shaped in center with long sulcus extending posteriorly on vertex; occiput not elevated at apex; frons with hairs very dense and not extending posteriorly of antennal base; palpus with segment 2 shorter than 4, ratio=6:15:13:16. Antenna with scape nearly 2× pedicel; 1st flagellar segment very small, globular, following segments globular and with or without very short internodes, distal segments with short internodes, terminal segment with

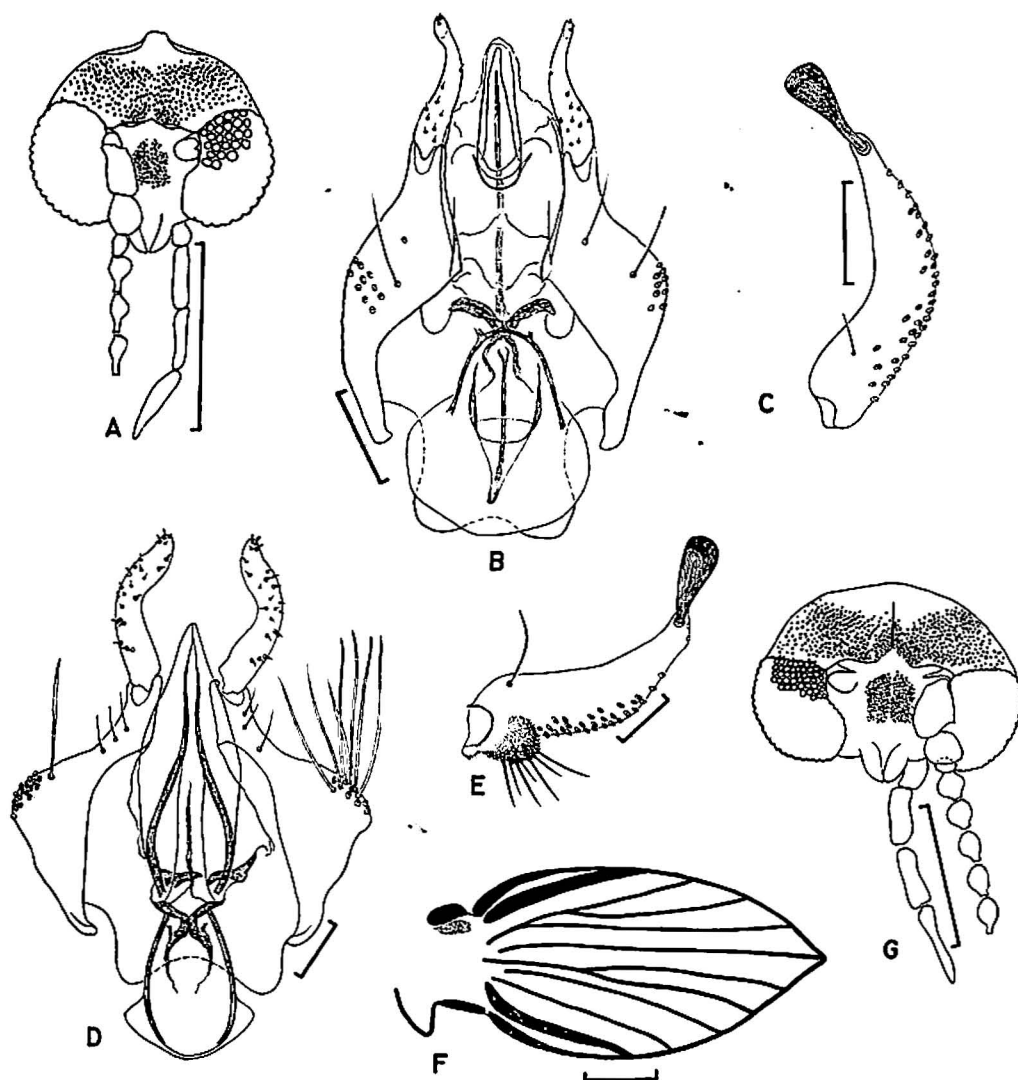


Fig. 21. a-c, *Paratelmatoscopus permistus*, ♂: a, head; b, genitalia, dorsal; c, surstyle. d-g, *Paratelmatoscopus nitidus*, ♂: d, genitalia, dorsal; e, surstyle; f, wing; g, head. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

slender, tapering apiculus; ascoids long, slender, sinuous. Wing rather short and broad; radial fork well distad of base of R_4 . Fore femur longer than tibia. Genitalia as figured; dististyle short and with blunt apex; aedeagus arrow-shaped with oval base; surstyle with basal enlargement on ventral surface.

Antenna=1.11 mm, wing length=1.90 mm, width=0.85 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7218): NE New Guinea, Karap, N of Jimmi-Waghi Divide, 1550 m, 20.VII.1955, J.L. Gressitt.

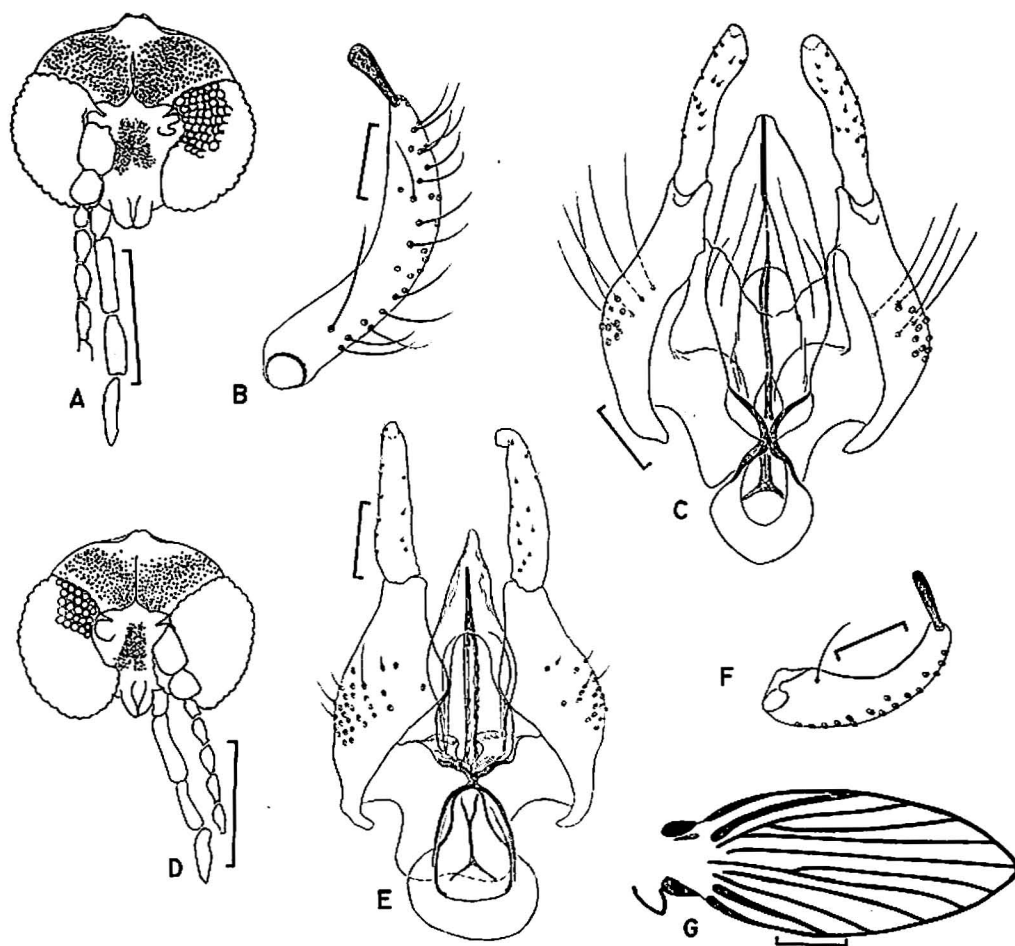


Fig. 22. a-c, *Paratelmatoscopus impigrus*, ♂; a, head; b, surstyle; c, genitalia, dorsal. d-g, *Paratelmatoscopus similis*, ♂: d, head; e, genitalia, dorsal; f, surstyle; g, wing. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

38. ***Paratelmatoscopus impigrus*** Quate and Quate, new species

Fig. 22a-c.

♂. Interocular suture inverted Y-shaped with long sulcus extending posteriorly on vertex; occiput elevated into truncated dome-like protuberance at apex; hair patch on frons not extending posteriorly of antennal base; palpus with segment 2 long, longer than other segments, ratio=7:17:13:14. Antenna with scape nearly 2× pedicel; 1st flagellar segment ovoid and without internode, following segments with ovoid nodes and short internodes, distal segments with internodes longer and slenderer, terminal segment with apiculis similar to preceding internode; ascoids slender, long, sinuous. Fore femur longer than tibia. Genitalia as figured; dististyle with sharp apex curving dorsad; aedeagus elongate spindle-shaped with ovoid base; surstyle of usual shape with small tenaculum.

Antenna=1.24-1.39 mm, wing length=2.10 mm (1.95-2.25), width=0.83 mm (0.80-0.87).

♀. Unknown.

Holotype ♂ (BISHOP 7219): NW New Guinea, Sibil Val, 1245 m, 18.X-8.XI.1961, Malaise

trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 9 ♂♂, same data, but some from light trap and on tree stump; 1 ♂, Bokondini, 1300 m, 16-23.XI.1961, Malaise trap, L. & S. Quate.

39. **Paratelmatoscopus similis** Quate and Quate, new species Fig. 22d-g.

♂. Interocular suture inverted Y-shaped in center with medial sulcus extending posteriorly on vertex; occiput with apex slightly elevated in small, rounded dome; frons with hair patch extending little posteriorly of antennal base; palpus with segment 2 longer than other segments, ratio=6:16:10:12. Antenna with scape about $1.5 \times$ pedicel; 1st flagellar segment small and ovoid, without internode, following segments with ovoid node and short internodes, distal internodes, longer and slenderer, terminal segment with apiculus longer and thicker than preceding internode; ascoids long, slender and sinuous. Wing with radial fork close to base of R_4 and well basad of medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle tapering to bluntly rounded, curved point; aedeagus spindle-shaped with bulbous base; surstyle shorter than basistyle, tenaculum longer than usual.

Antenna=1.02-1.08 mm, wing length=1.57-1.77 mm, width=0.60-0.67 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7220): W. New Guinea, Sibil Val, 1245 m, 18.X-8.XI.1961, burned tree stump, S. Quate. Paratypes (BISHOP): 3 ♂♂, same data but collected in light trap.

Genus **Telmatoscopus** Eaton 1904

Type-species. *Pericoma advena* Eaton, by subseq. select.

Range. Cosmopolitan.

The known New Guinea species of *Telmatoscopus* are easily placed in one of five subgenera. The nominate subgenus is not present in New Guinea.

KEY TO PAPUAN SUBGENERA OF TELMATOSCOPIUS

1. Eyes separated on midline; terminal antennal segments not reduced 2
Eyes contiguous on midline; terminal 2 antennal segments reduced; wing narrow and lanceolate **Rhadinoscopus**
2. Antennal ascoids multiple, not consisting of pair of single rods, if so, radial fork, basad of medial.....3
Antennal ascoids consisting of pair of simple, long coiled rods on each segment; radial fork distad of medial, wing often spotted at forks and vein tips; R_4 ends in wing apex **Eutelmatoscopus**
3. Wing apex rounded 4
Wing apex acute; ascoids palmate or V-shaped; R_{2+3} originates within 1st basal cell; wing broad, unspotted **Clogmia**
4. Wing not unusually broad; radial fork basad of medial, near center of wing; R_2 fractured or partly interrupted at base and R_3 with stronger curve than R_2 at fork; R_1 with pale or unsclerotized spot near base **Nototelmatoscopus**
Wing very broad; forks on same level near base of wing; radial fork normal with even curvature of R_2 and R_3 **Oreoscopus**

Subgenus **Nototelmatoscopus** Satchell

Telmatoscopus (*Nototelmatoscopus*) Satchell, 1953, Austr. J. Zool. 1: 398.

Moderate-sized species with blunt rounded wing and unusual configuration of radial fork.

Eye bridges separated. Antenna with ascoids, a number of simple ones encircling node or single pair per segment; internodes short; terminal segments not reduced. Palpus 2=3. Male sometimes with sense organs on head.

Wing moderately broad, R_5 ending beyond broadly rounded apex; radial fork basad of medial; R_{2+3} originates at or beyond apex of 1st basal cell; Cu ends beyond level of medial fork; R_3 fractured or partly interrupted at base and R_4 with stronger curve than R_2 at fork; R_1 with pale or unsclerotized spot near base; C often enlarged and strongly curved at base; Cu ending beyond level of medial fork. Patagia sometimes on prothorax. Male surstyle short and broad, with many tenacula; aedeagus furcate.

Type-species. *Telmatoscopus obscurus* Satchell, by orig. desig.

Range. P.I. (?), Borneo, New Guinea, Australia.

KEY TO NEW GUINEA SPECIES OF NOTOTELMATOSCOPUS

1. Head without sharp, rod-like projection on occiput 2
 Head with sharp, arrow-like projection on occiput; ♂ clypeus enlarged and densely punctate; ♂ palpus, especially segments 2 & 3, inflated.....40. **centraceps**
- 2 (1). Wing length about 2 mm or less; costal margin normal 3
 Wing large, 2.7 mm or more; costal margin a little indented at about level of Sc tip, angled and then nearly straight to tip of R_1 , basal costal area enlarged and angle more pronounced in ♂ than in ♀41. **reburus**
- 3 (2). Radial fork, basad of medial4
 Forks on same level; wing membrane darkly infuscate; ♀ subgenital plate with attenuate, divergent lobes.....42. **agrestis**
- 4 (3). Sc joined to R_1 , connection may be thin and consist of single row of hairs..... 5
 Sc ending free, not attached to R_110
- 5 (4). Eyes separated by 4 or less facet diameters..... 6
 Eyes widely separated by 7 facet diameters, interocular suture faint and barely visible; radial fork near base of wing43. **lippus**
- 6 (5). Internodes lacking on basal segments and less than $1/2 \times$ nodes on distal segments 7
 Internodes well developed, distal internodes at least $1/2 \times$ nodes..... 9
- 7 (6). Hair patch on frons trapezoidal or rectangular, sides indented at base of median band..... 8
 Hair patch on frons triangular, sides merge uninterrupted with median band.....47. **scarificatus**
- 8 (7). Tip of Cu little beyond medial fork; wing membrane infuscate; apical lobe of ♀ subgenital plate large, with divergent sides; ♀ spermatheca slender46. **castaneus**
 Tip of Cu well beyond medial fork; wing membrane pale; apical lobe of ♀ subgenital plate small, elongate, with slightly convergent sides; ♀ spermatheca large and hemispherical45. **lobellus**
- 9 (6). Hair patch on frons trapezoidal; fore femur longer than tibia; ♂ dististyle with bifurcate appendage on outer margin near center; apical lobe of ♀ subgenital plate not constricted at base44. **tridentatus**
 Hair patch on frons triangular; ♂ fore femur shorter than tibia; ♂ dististyle simple, without appendage; apical lobe of ♀ subgenital plate constricted at base.....48. **cracentus**
- 10 (4). Distal internodes $1/2$ or more length of node; antenna 3 usually with internode11
 Distal internodes short, less than $1/2 \times$ node; antenna 3 without internode16
- 11(10). Vertex $2-4 \times$ width of eye bridge12
 Eye bridge wide and hence vertex only $1-1.5 \times$ width of eye bridge; eyes narrowly separated by about 1 facet diameter; ♂ surstyle obliquely truncate at apex and bearing about 26 tenacula49. **confragus**
- 12(11). Vertex $2-3 \times$ width of eye bridge13
 Eye bridge narrow and hence vertex $4 \times$ width of bridge; antennal nodes weakly developed; ♂ dististyle with slender projection near base50. **appendiculatus**
- 13(12). Hair patch on frons triangular, sides merge with median band without interruption; interocular suture arched14

- Hair patch on frons trapezoidal, sides indented at base of median band; interocular suture angulate15
- 14(13). Palpus 1 cylindrical, same width as 2; occiput elevated but not in conical projection.....51. **fragilis**
Palpus 1 bulbous, wider than 2; occiput extended as conical projection.....52. **bulbulus**
- 15(13). ♂ basistyle short, as wide as long; ♂ dististyle bearing 4 bristles subapically, as long as subapical width of style; apical lobe of ♀ subgenital plate short, wider than long.....53. **sisyphus**
♂ basistyle longer than wide; subapical bristles of dististyle shorter than width of style; apical lobe of ♀ subgenital plate elongate, longer than wide.....54. **longicercus**
- 16(10). Eyes widely separated by 3.5 or more facet diameters; ♂ dististyle with supernumerary appendage at base17
Eyes separated by 3 or less facet diameters; ♂ dististyle without basal appendage18
- 17(16). ♂ dististyle sclerotized and darkened over entire length; apical lobe of ♀ subgenital plate very broad, width 1.7× length57. **baitabagensis**
♂ dististyle sclerotized only at apex; apical lobe of subgenital plate about as wide as long55. **hirsutus**
- 18(16). All hairs on vertex evenly distributed19
Vertex with dense patch of hairs at center behind eyes, much denser than other hairs; ♂ genitalia with dististyle slender and curved, aedeagus and parameres forming arrow-shaped structure56. **repandus**
- 19(18). Hair patch on frons triangular, merging uninterrupted with median band; eyes separated by 2.5–3 facet diameters; ♂ dististyle short and broad with 2 spinose apices, inner one rounded and outer digitiform58. **empheres**
Hair patch on frons trapezoidal, indented at base of median band; eyes separated by 1–2 facet diameters; ♂ dististyle evenly tapering to blunt apex59. **obtusulatus**

40. **Telmatoscopus (Nototelmatoscopus) centriceps** Quate and Quate, new species

Fig. 23a–g.

♂. Eyes separated by 1.5–2 facet diameters, eye bridge rather short, with 3 or 4 rows of facets, interocular suture slightly arched; vertex 2.5× width of eye bridge, occiput extended into acutely pointed, arrow-like projection; frons with compact, trapezoidal patch of hairs, median band an irregular double row extending to upper eye margin and widening posteriorly; clypeus protuberant and enlarged, densely and coarsely punctate; 1st 3 palpal segments enlarged, ratio=10:17:17:21. Antenna with scape 2× pedicel; flagellum with basal internodes very short, distal internodes nearly as long as nodes. Thorax without patagium. Wing as figured; R_2 broken at fork; radial fork little basad of medial; Cu ends far beyond medial fork. Fore femur considerably longer than tibia. Genitalia as figured; dististyle simple, unmodified; surstyle with about 30 tenacula, longer basal ones feathered at tips.

Antenna 3=0.97–1.09 mm, wing length=1.75–1.87 mm, width=0.67–0.70 mm.

♀ Similar to ♂. Eyes separated by 3.5 facet diameters; vertex about 4X width of eye bridge, arrow-like projection at apex smaller than in ♂, clypeus unmodified. Genitalia as figured, typical of genus.

Antenna 3=0.72–0.79 mm, wing length=1.55–1.87 mm, width=0.57–0.67 mm.

Holotype ♂, allotype ♀ (BISHOP 7221): NW New Guinea, Vogelkop, Kebar Val, 4–31.I. 1962, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 4 ♀♀, same data as types; 2 ♂♂, 3 ♀♀, NW New Guinea, Vogelkop, Ransiki, 8.VIII.1957, D.E. Hardy; 1 ♂, NW NG, Swart Val, Karubaka, 1400 m, 21.XI.1958, Gressitt.

The projection from the occiput, which is present in both sexes, and the enlarged punctate clypeus of the male is unlike characters found in any other New Guinea *Nototelmatoscopus* and are distinctive of *centriceps*.

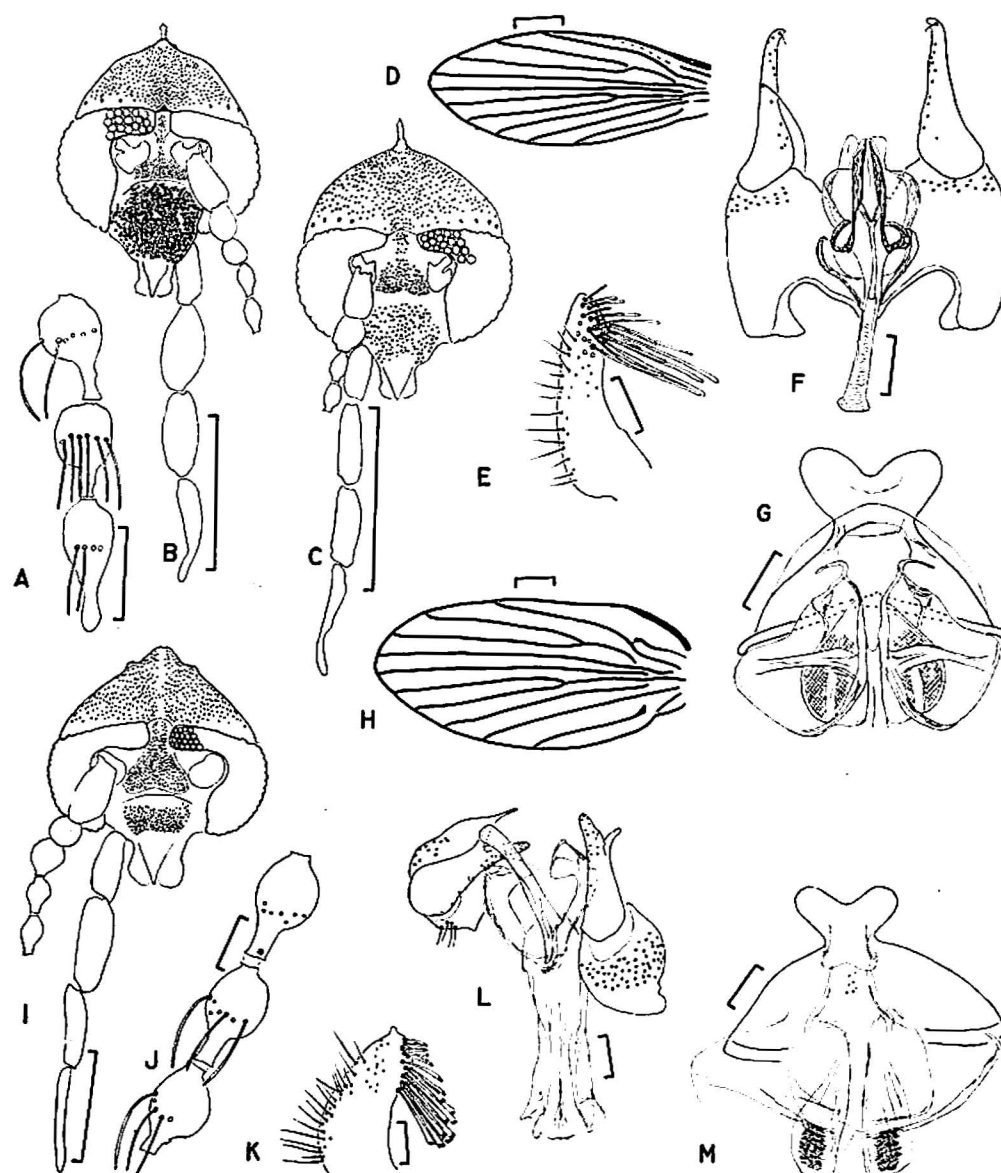


Fig. 23. a-g, *Telmatoscopus* (*Nototelmatoctopus*) *centriceps*: a, ♂ antenna tip; b, ♂ head; c, ♀ head; d, ♂ wing; e, ♂ surstyle; f, ♂ genitalia, dorsal; g, ♀ genitalia. h-m, *T. (N.) reburrus*: h, ♂ wing; i, ♂ head; j, ♂ antenna; k, ♂ surstyle; l, ♂ genitalia, dorsal; m, ♀ genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

41. *Telmatoscopus* (*Nototelmatoctopus*) *reburrus* Quate and Quate, new species

Fig. 23h-m.

Large species with enlarged costal margin.

♂. Eyes separated by 3 facet diameters, bridge with 4 rows of facets but narrowing to 3 rows at base of bridge, interocular suture highly arched; vertex 3× width of eye bridge, sides sloping to

occiput, which is elevated and indented, small protuberance on side before apex; frons with hair patch triangular and merging uninterrupted with median band which extends to suture; 1st 3 palpal segments enlarged and densely haired, ratio=17:26:21:27. Antenna with scape 2.5× pedicel; flagellum with segment 1 larger than others and with obsolescent internodes, other nodes normal, distal internodes about 1/2 length of nodes. Thorax without patagium. Wing large, basal costal area enlarged and angulate, costal veins strongly thickened from base to beyond apex of Sc, slight indentation in costal margin beyond end of thickening; radial fork little basad of medial; Sc weakly joined to R₁; Cu ending far beyond medial fork. Fore femur and tibia equal in length. Genitalia as figured; dististyle with curved, blunt projection at distal 1/3; surstyle acutely pointed, short and straight, with about 35 tenacula.

Antenna=1.87 mm, wing length=3.00 mm, width=1.25–1.30 mm.

♀. Similar to ♂ (but head lacking). Wing with costal margin and base of C not as enlarged as ♂. Genitalia as figured; apical lobe of subgenital plate Y-shaped with thick stem, thickly setose; spermatheca marked with fine striations.

Wing length=2.77 mm, width=1.12 mm.

Holotype ♂ (BISHOP 7222): NE New Guinea, Minj area, 1700 m, 30.VI.1957, D.E. Hardy; allotype ♀ (BISHOP): NE New Guinea, 24 km E of Minj, 1600 m, 25.VI.1957, Hardy. Paratype (BISHOP): 1 ♂, same data as allotype.

The modified wing of *reburus* is unusual for New Guinea species of *Nototelmatoscopus* but is similar to some Australian species of this subgenus. The male and female genitalia of *reburus* are quite distinctive.

42. ***Telmatoscopus (Nototelmatoscopus) agrestis*** Quate and Quate, new species

Fig. 24a–d.

Large species with darkly infusate wings.

♀. Eyes separated by 3 facet diameters, eye bridge with 4 rows of facets, interocular suture inverted V-shaped but interrupted in center; vertex 3.5× width of eye bridge, sides sloping and occiput obtuse; frons with triangular patch of hair merging uninterrupted with median band, which consists of about 4 rows; ratio of palpal segments=9:17:16:18. Antenna with scape 2× pedicel; flagellar segments with weak nodes and small internodes, basal segments appear spindle-shaped but distal ones with definite internode. Wing membrane darkly infusate; radial and medial forks on same level; Sc ending free, not joined to R₁; Cu ending far beyond medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate terminating in 2 elongate lobes which curves outwards away from each other; spermatheca with strong basal reticulations.

Antenna=1.05 mm, wing length=2.02 mm, width=0.85 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7223): NW New Guinea, Geelvink Bay, Nabire, 7.VII.1962, on *Alpinia*, J.L. Gressitt.

The darkly sclerotized wings, the radial and medial forks being on the same level, and the distinctive subgenital plate separate this species from others in the subgenus *Nototelmatoscopus*.

43. ***Telmatoscopus (Nototelmatoscopus) lippus*** Quate and Quate, new species

Fig. 24e–g.

♀. Eyes widely separated by 7 facet diameters, eye bridge with 4 rows of facets, interocular suture faint, arched; vertex 3× width of eye bridge, sides evenly rounded, occiput with indentation; frons with triangular patch of hairs extending to suture; palpus 1 a little enlarged, ratio=7.13:12:15. Antenna with scape short, but little longer than pedicel; basal flagellar segments without internodes, distal segments with short internodes. Wing with radial fork basad of medial; Sc joined to R₁;

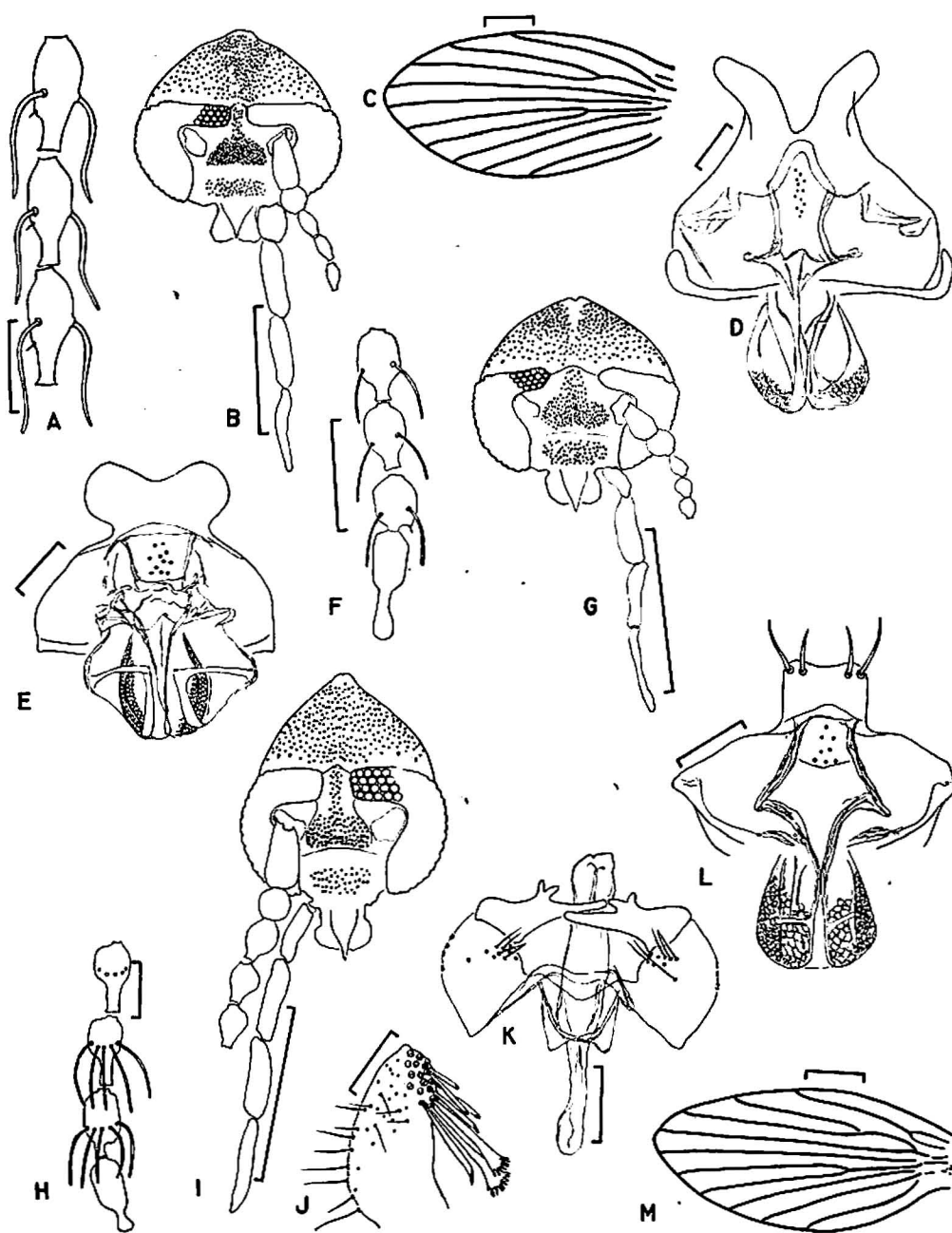


Fig. 24, a-d, *Telmatoscopus* (*Nototelmatoscopus*) *agrestis*, ♀: a, antenna; b, head; c, wing; d, genitalia, e-g, *Telmatoscopus* (*Nototelmatoscopus*) *lippus*, ♀: e, genitalia; f, antenna tip; g, head. h-m, *Telmatoscopus* (*Nototelmatoscopus*) *tridentatus*: h, ♂ antenna tip; i, ♂ head; j, ♂ surstyle; k, ♂ genitalia, dorsal; l, ♀ genitalia; m, ♂ wing. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

Cu ending beyond medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate ending in pair of rounded, setose lobes, with rectangular outline on inner face; spermatheca dark brown, lightly reticulate over most of surface.

Antenna=0.61 mm, wing length=1.47 mm, width=0.55 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7224): NW New Guinea, Biak I, Kampong Landbouw, 40 m, 17.VII. 1957, D.E. Hardy.

The widely separated eyes of *lippus* is a character not found in any of other known species of *Nototelmatoscopus* found in New Guinea.

44. **Telmatoscopus (Nototelmatoscopus) tridentatus** Quate and Quate, new species

Fig. 24h-m.

♂. Eyes separated by 3 facet diameters, eye bridge with 4 rows of facets, interocular suture broadly inverted V-shaped; vertex $3\times$ width of eye bridge, sides evenly sloping to blunt occiput; frons with rectangular patch of hair, median band an irregular triple row extending to suture; palpus 1 cylindrical, 2 and 3 equal in length, ratio=9:14:14:17. Antenna with scape little more than $2\times$ pedicel; flagellar segment 1 larger than other segments, with short internode; remaining segments largely with eccentric nodes, distal internodes little shorter than nodes. Thorax with small, ovoid patagium attached by thick, membranous stalk. Wing with radial fork little basad of medial; base of R_2 interrupted at fork; Sc weakly attached to R_1 ; Cu ending well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle with bifurcate process near center on outer margin; surstyle short, bearing about 20 tenacula, several oblong, basal tenacula enlarged and feathered at tips.

Antenna=1.14 mm, wing length=1.75 mm, width=0.75 mm.

♀. Similar to ♂. Flagellar segments smaller than ♂. Genitalia as figured; apical lobe of subgenital plate rectangular, about as wide as high and weakly indented on apical margin; spermatheca lightly reticulate.

Antenna=0.82-0.84 mm, wing length=1.80-1.85 mm, width=0.70-0.72 mm.

Holotype ♂, allotype ♀ (BISHOP 7225): NW New Guinea, Bokondini, 1300 m, 16-23.XI. 1961, L. Quate. Paratypes (BISHOP, USNM): 1♂, 2♀♀, same data as types.

The bifurcate process on the male dististyle and the small rectangular apical lobe of the female subgenital plate are the characters which most readily distinguish *tridentatus* from related species of *Nototelmatoscopus*.

45. **Telmatoscopus (Nototelmatoscopus) lobellus** Quate and Quate, new species

Fig. 25a-d.

♀. Eyes separated by 3 facet diameters, eye bridge with 4 rows of facets, interocular suture broadly, inverted V-shaped; vertex $2.5\times$ width of eye bridge, sides rounded and slightly elevated at occiput; frons with trapezoidal patch of hair, median band consisting of about 5 irregular rows and extending to suture; palpus 1 enlarged, ratio of segments=8:12:12:18. Antenna with scape $1.5\times$ pedicel; flagellum with basal internodes very short, distal internodes less than $1/2\times$ nodes. Wing with radial fork basad of medial; Sc joined to R_1 ; Cu ending well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate with small elongate apical lobe which is densely setose on apical $1/3$ and apical margin concave; spermatheca large and hemispherical, densely reticulate.

Antenna=0.80 mm, wing length=1.60-1.75 mm, width=0.62-0.67 mm.

♂. Unknown.

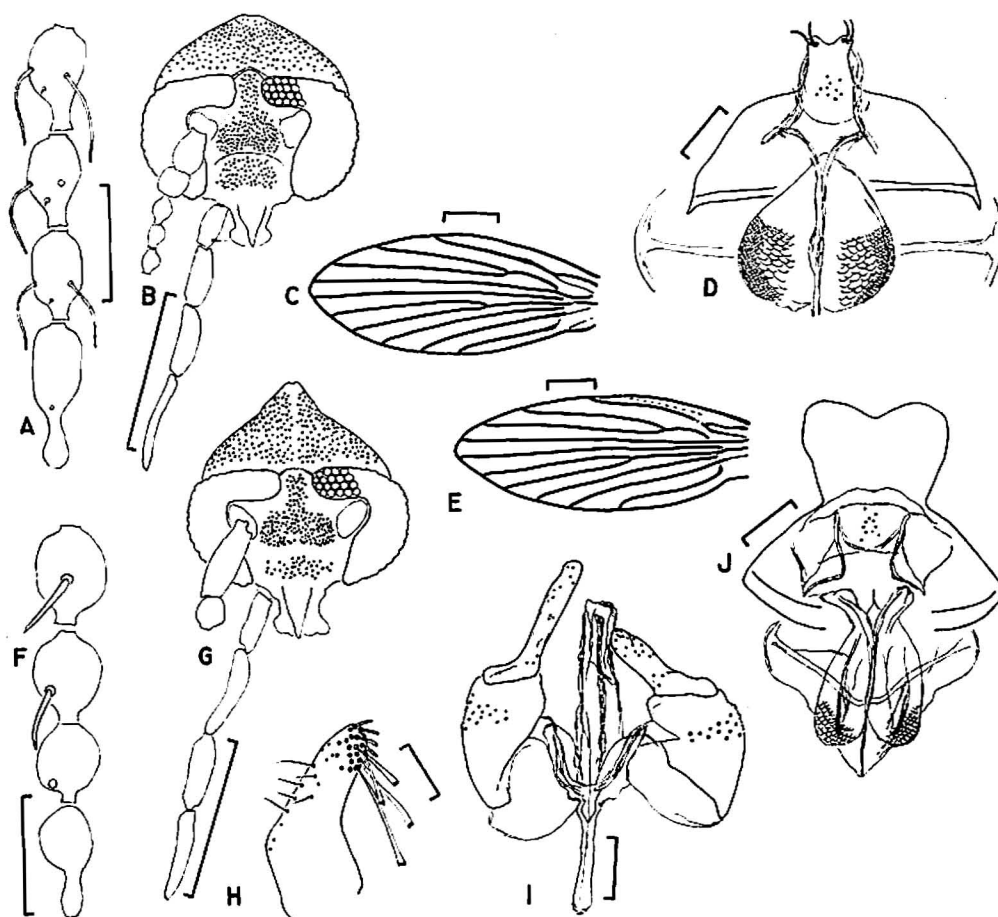


Fig. 25. a-d, *Telmatoscopus (Nototelmatoctopus) lobellus*, ♀: a, antenna tip, b, head; c, wing; d, genitalia. e-j, *Telmatoscopus (Nototelmatoctopus) castaneus*: e, ♂ wing; f, ♀ antenna tip; g, ♂ head; h, ♂ surstyle; i, ♂ genitalia, dorsal; j, ♀ spermatheca. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

Holotype ♀ (BISHOP 7226): NE New Guinea, Baitabag, 14 km N of Madang, 1.XII.1964, W.A. Steffan. Paratypes (BISHOP, USNM): 2 ♀♀, same data as types, 3 ♀♀, NW New Guinea, Hollandia, 27.VII.1955, 23.VIII.1955, J.L. Gressitt.

The small, elongate apical lobe of the subgenital plate and the large, reticulate spermatheca of *lobellus* are the main features which will distinguish this species from others of *Nototelmatoctopus*.

46. *Telmatoscopus (Nototelmatoctopus) castaneus* Quate and Quate, new species

Fig. 25e-j.

♂. Eyes separated by 3.5 facet diameters, eye bridge with 4 rows of facets, interocular suture arched; vertex 3 × width of eye bridge, sides sloping to projecting occiput which is flattened; frons with rectangular patch of hairs, median band wide and extending to upper part of eyes; palpus 1 cylindrical, ratio=11:16:14:17. Antenna with scape 2.5 × pedicel; (remainder of antenna broken, see ♀). Thorax with large, hemispherical patagium, surface sparsely covered with hair sockets

except at apex where sockets are dense, in live specimens sockets apparently bear spatulate hairs. Wing membrane infusate; radial fork well basad of medial; Sc fused to R_1 ; Cu ends little beyond medial fork. Genitalia as figured; dististyle straight and rod-like with nearly parallel sides; aedeagus a straight, blunt shaft; surstyle strongly bent near base, bearing 18 tenacula, long basal ones feathered at tips.

Wing length=2.00 mm, width=0.72 mm

♀. Similar to ♂. Eyes separated by 4–4.5 facet diameters; vertex $2.5\times$ width of eye bridge, not as sharply projecting as in ♂; antenna with scape about $1.5\times$ pedicel; flagellum with internodes very short and nodes symmetrical. Thorax without patagium. Genitalia as figured; apical lobe broad with divergent sides; spermatheca slender, with coarse reticulation over basal surface.

Antenna=0.70–0.75 mm, wing length=1.82–2.05 mm, width=0.66–0.77 mm.

Holotype ♂, allotype ♀ (BISHOP 7227): NE New Guinea, Morobe Dist, 15 km W of Lae, 17.IV.1965, Y.M. Huang and W.A. Steffan. Paratypes (BISHOP, USNM): 3 ♀♀, same data as types.

47. **Telmatoscopus (Nototelmatoscopus) scarificatus** Quate and Quate, new species

Fig. 26a–c.

♀. Eyes separated by 2.5 facet diameters, eye bridge with 4 rows of facets, interocular suture forming obtuse angle and with thick posterior spur at midline; vertex $2-2.5\times$ width of eye bridge, occiput flattened and slightly protuberant; frons with hair patch usually triangular and sides merging uninterrupted with median band, which consists of 3 irregular rows; ratio of palpal segments=6:11:11(10):15. Antenna with scape $1.5\times$ pedicel; flagellar segment 1 without internode, distal internodes about $1/3\times$ nodes. Wing with radial fork little basad of medial; Sc fused to R_1 ; Cu ending well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; apical lobe of subgenital plate wider than long, deeply concave apically; spermatheca hemispherical, with dark reticulation over basal $1/2$.

Antenna=0.67–0.71 mm, wing length=1.40–1.50 mm, width=0.52–0.60 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7228): Papua, Murua, 17–22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (BISHOP, USNM, BMNH, CSIRO): 8 ♀♀, same data as type.

48. **Telmatoscopus (Nototelmatoscopus) cracentus** Quate and Quate, new species

Fig. 26d–i.

♂. Eyes separated by 2.5 facet diameters, eye bridge with 4 rows of facets, interocular suture nearly straight; vertex $2.5-3\times$ width of eye bridge, sides steeply sloping to flat occiput, 2 lobular sense organs attached behind apex; frons with triangular hair patch, sides merging uninterrupted with median band, which consists of 2–3 rows and thickening posteriorly, oblique suture from antennal fossa to inner eye margin; palpus with segment 1 cylindrical, ratio of segments=11:20:17:20. Antenna with scape $2.5\times$ pedicel; flagellar segment 1 larger than others and with short internode, other nodes eccentric, distal internodes more than $1/2\times$ nodes. Thorax without patagium. Wing with radial fork well basad of medial; Sc fused to R_1 ; Cu ending well beyond medial fork. Fore femur shorter than tibia. Genitalia as figured; dististyle simple, tapering to apex, which ends in small curved point; surstyle curved on ventral margin and with acute apex, bearing about 16 tenacula, basal ones feathered at tips.

Antenna=1.42–1.50 mm, wing length=1.98 mm (1.87–2.10), width=0.85 mm (0.80–0.92).

♀. Similar to ♂. Eyes separated by 3–4 facet diameters; head without sense organs; nodes of flagellar segments smaller than in ♂. Fore femur as long as or longer than tibia. Genitalia as

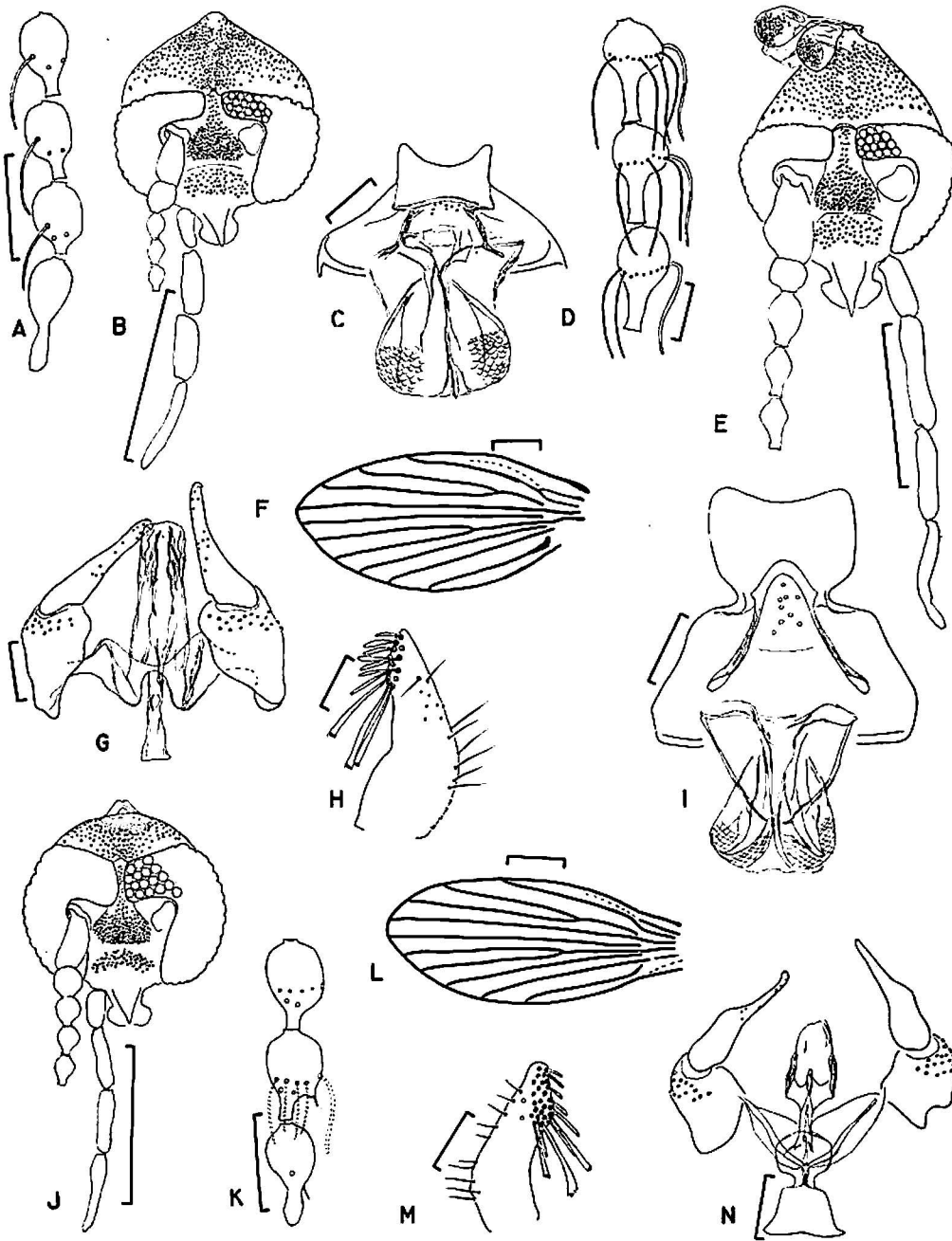


Fig. 26. a-c, *Telmatoscopus* (*Nototelmatoctopus*) *scarificatus*, ♀: a, antenna tip; b, head; c, genitalia. d-i, *Telmatoscopus* (*Nototelmatoctopus*) *cracentus*: d, ♂ antenna; e, ♂ head; f, ♂ wing; g, ♂ genitalia; dorsal; h, ♂ surstyle; i, ♀ genitalia. j-n, *Telmatoscopus* (*Nototelmatoctopus*) *confragus*, ♂: j, head; k, antenna tip; l, wing; m, surstyle; n, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

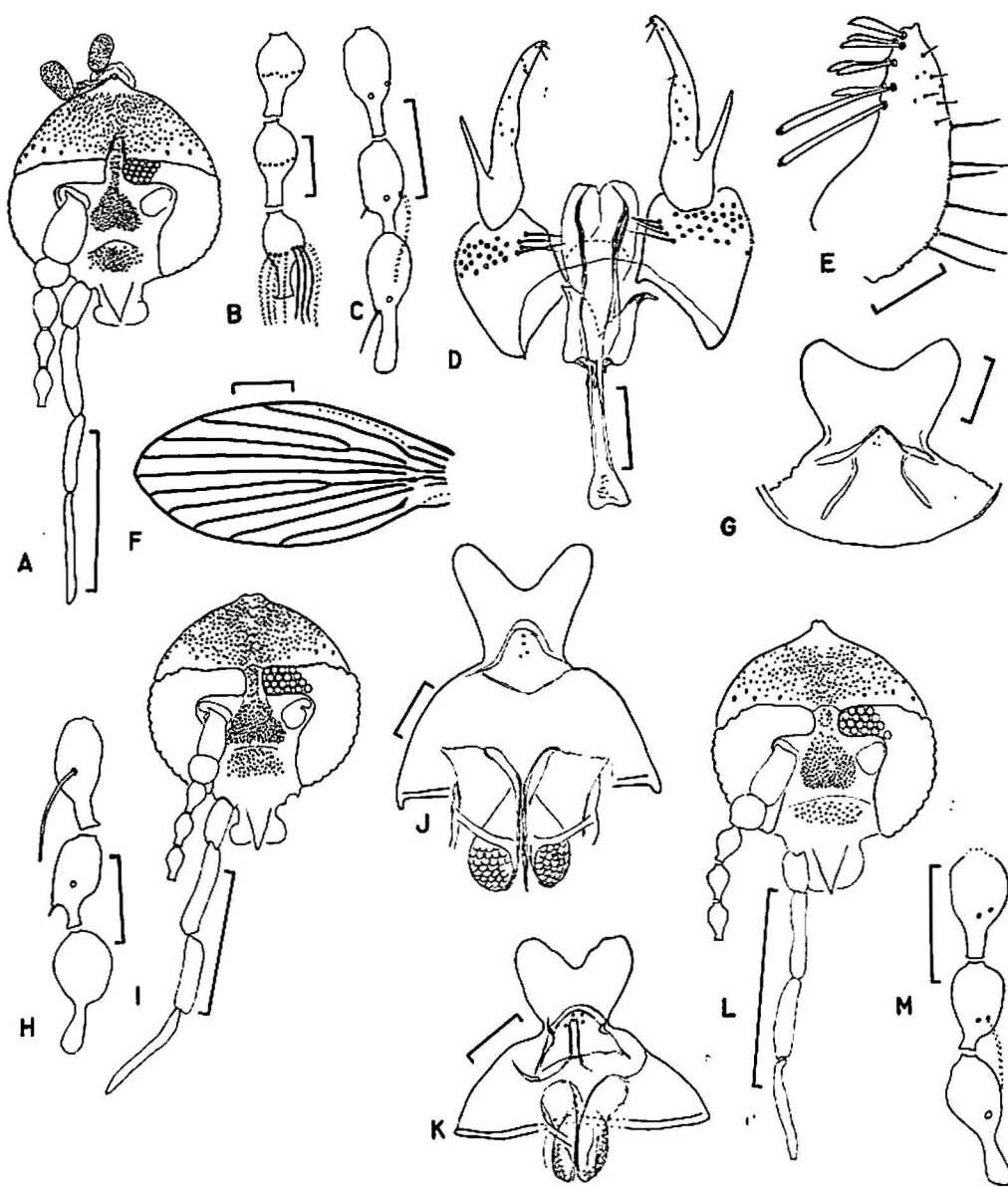


Fig. 27. a-g, *Telmatoscopus* (*Nototelmatoscopus*) *appendiculatus*: a, ♂ head; b, ♂ antenna; c, ♀ antenna tip; d, ♂ genitalia, dorsal; e, ♂ surstyle; f, ♂ wing; g, ♀ subgenital plate. h-j, *Telmatoscopus* (*Nototelmatoscopus*) *fragilis*, ♀: h, antenna tip; i, head; j, genitalia. k-m, *Telmatoscopus* (*Nototelmatoscopus*) *bulbulus*, ♀: k, genitalia; l, head; m, antenna tip. Scale lines of heads & wing = 0.3 mm; others = 0.05 mm.

illustrated; apical lobe of subgenital plate rectangular but constricted at base; spermatheca lightly reticulate.

Antenna=0.95-1.00 mm, wing length=1.95 mm (1.87-2.00), width=0.76 mm (0.72-0.80).

Holotype ♂, allotype ♀ (BISHOP 7229): NW New Guinea, Bokondini, 16-23.XI.1961, L. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 14 ♂♂, 10 ♀♀, same data as types.

49. **Telmatoscopus (Nototelmatoscopus) confragus** Quate and Quate, new species

Fig. 26j-n.

♂. Eyes narrowly separated by 1 facet diameter, eye bridge with 4 rows of facets but unusually wide, interocular suture broadly, inverted V-shaped; vertex 1-1.5× width of eye bridge, sides rounded, occiput with membranous, blunt projection; frons with trapezoidal patch of hairs, median band an irregular double row extending to upper row of facets; ratio of palpal segments=7:11:11:15. Antenna with scape 2× pedicel; flagellar segment 1 with short internode, distal internodes a little more than 1/2× nodes. Thorax with cluster of small rods and stalked scales in front of anterior spiracle which probably are homologous to patagia. Wing with radial fork basad of medial; Sc ending free, not attached to R₁; Cu ending well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle enlarged over basal 1/3; aedeagus ending in tridentate process; surstyle a little curved, bearing about 26 tenacula, basal ones feathered at tips.

Antenna=0.91-0.92 mm, wing length=1.60-1.72 mm, width=0.62-0.65 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7230): NW New Guinea, Vogelkop, Kebar Val., 4-31.I.1962, Malaise trap, L. & S. Quate. Paratype: 1♂, same data.

50. **Telmatoscopus (Nototelmatoscopus) appendiculatus** Quate and Quate, new species

Fig. 27a-g.

♂. Eyes separated by 2 facet diameters, eye bridge narrow, with 4 rows of facets, interocular suture lacking; vertex 4× width of eye bridge, sides rounded and extended into blunt projection at occiput, pair of ovoid sense organs attached by slender, membranous stalks to back of vertex, surface of organs covered by microtrichiae and few clear spots; frons with triangular patch of hair, sides merge uninterrupted with median band which extends to upper eye margin; palpus a little enlarged, ratio=9:17:14:21. Antenna with scape 2× pedicel; flagellar segment 1 with short internode, distal internodes about 1/2× nodes. Thorax without patagia. Wing with radial fork basad of medial; base of R₂ interrupted at fork; Sc ending free, not joined to R₁ but pigmented area may appear to complete connection; Cu ends well beyond medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle with slender, acute appendage on outer margin near base; surstyle with only 8 tenacula, basal 2 longer than others.

Antenna=1.23 mm, wing length=1.75 mm, width=0.75 mm.

♀. Similar to ♂. Eyes separated by 3 facet diameters; head without sense organs. Genitalia as figured; apical lobe of subgenital plate typical of genus, with sloping, divergent sides and concave apical margin. Antenna=1.08 mm, wing length=1.95 mm, width=0.75 mm.

Holotype ♂, allotype ♀ (BISHOP 7231): NE New Guinea, Wau, 1200 m, 13-21.XII.1961, Malaise trap, J. Sedlacek.

51. **Telmatoscopus (Nototelmatoscopus) fragilis** Quate and Quate, new species

Fig. 27h-j.

♀. Eyes separated by about 2 facet diameters, eye bridge with 4 rows of facets, interocular suture rounded and with thickening at midline; vertex 2-2.5× width of eye bridge, occiput a little protuberant and indented on midline; frons with triangular patch of hair which merges uninterrupted-

ed with median band, band consists of 3 irregular rows extending to upper eye margin; 1st palpal segment cylindrical, ratio of segments=10:17:16:22. Antenna with scape $2\times$ pedicel; flagellum with basal internodes short, distal internodes $1/2\times$ nodes. Wing with Sc ending free, not attached to R_1 ; radial fork basad of medial; Cu ends well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate with V-shaped apical lobe; spermatheca lightly reticulate over basal surface.

Antenna=1.09 mm, wing length=1.60-1.82 mm, width=0.65-0.75 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7232): NE New Guinea, Baitabag, 1.XII.1964, W.A. Steffan.

52. **Telmatoscopus (Nototelmatoscopus) bulbulus** Quate and Quate, new species Fig. 27k-m.

♀. Eyes separated by 2.5 facet diameters, interocular suture rounded and a little weakened over central area, eye bridge with 4 rows of facets; vertex $3\times$ width of eye bridge, side rounded and extended into conical projection at occiput with indentation on midline and Y-shaped, sclerotized piece on posterior surface; frons with triangular patch of hair, sides merge uninterrupted with median band, consisting of 3-4 rows and extending to upper eye margin; 1st palpal segment bulbous and short, ratio of segments=7:13:12:15. Antenna with scape $2\times$ pedicel; basal flagellar segments with short internodes, distal internodes $1/2\times$ nodes. Wing with Sc free and not attached to R_1 ; R_1 weakened beyond apex of Sc; radial fork basad of media; Cu ending little beyond medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate with thick, V-shaped apical lobe; spermatheca small and reticulate over lateral surface.

Antenna=0.90 mm, wing length=1.62 mm, width=0.62 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7233): NE New Guinea, Wau, 1200 m, 13-17.XII.1961, Malaise trap, J. Sedlacek.

53. **Telmatoscopus (Nototelmatoscopus) sisypus** Quate and Quate, new species Fig. 28a-e

♂. Eyes separated by 1.5 facet diameters, interocular suture forming obtuse angle, weakened in center, eye bridge with 4 rows of facets; vertex nearly $2.5\times$ width of eye bridge, sides steeply sloping to apex which extends in conical projection at occiput and with indentation on midline; frons with trapezoidal patch of hair, median band an irregular triple row extending to suture; (palpus broken, see ♀). Antenna with scape $2\times$ pedicel; flagellum with basal internodes short, distal internodes nearly as long as nodes. Thorax without patagium. Wing with Sc free, not joined to R_1 ; base of R_2 interrupted at fork; radial fork basad of medial; Cu ending beyond medial fork. Genitalia as figured; dististyle simple, tapering to rounded apex, with 4 short, subapical bristles; surstyle short and curved at base, bearing 10-12 short tenacula.

Antenna=2.94 mm, wing length=1.67-1.75 mm, width=0.67 mm.

♀. Similar to ♂. Eyes separated by 3 facet diameters; ratio of palpal segments=8:11:11(10):13. Genitalia as figured; apical lobe of subgenital plate short, wider than long; spermatheca reticulate over most of surface.

Antenna=0.68 mm, wing length=1.62-1.77 mm, width=0.55-0.62 mm.

Holotype ♂, allotype ♀ (BISHOP 7234): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, hillside vegetation and Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM): 1 ♂, 2 ♀♀, same data as types.

54. **Telmatoscopus (Nototelmatoscopus) longicrus** Quate and Quate, new species Fig. 28f-i.

♂. Eyes separated by 1.5 facet diameters, interocular suture slightly arched, with small

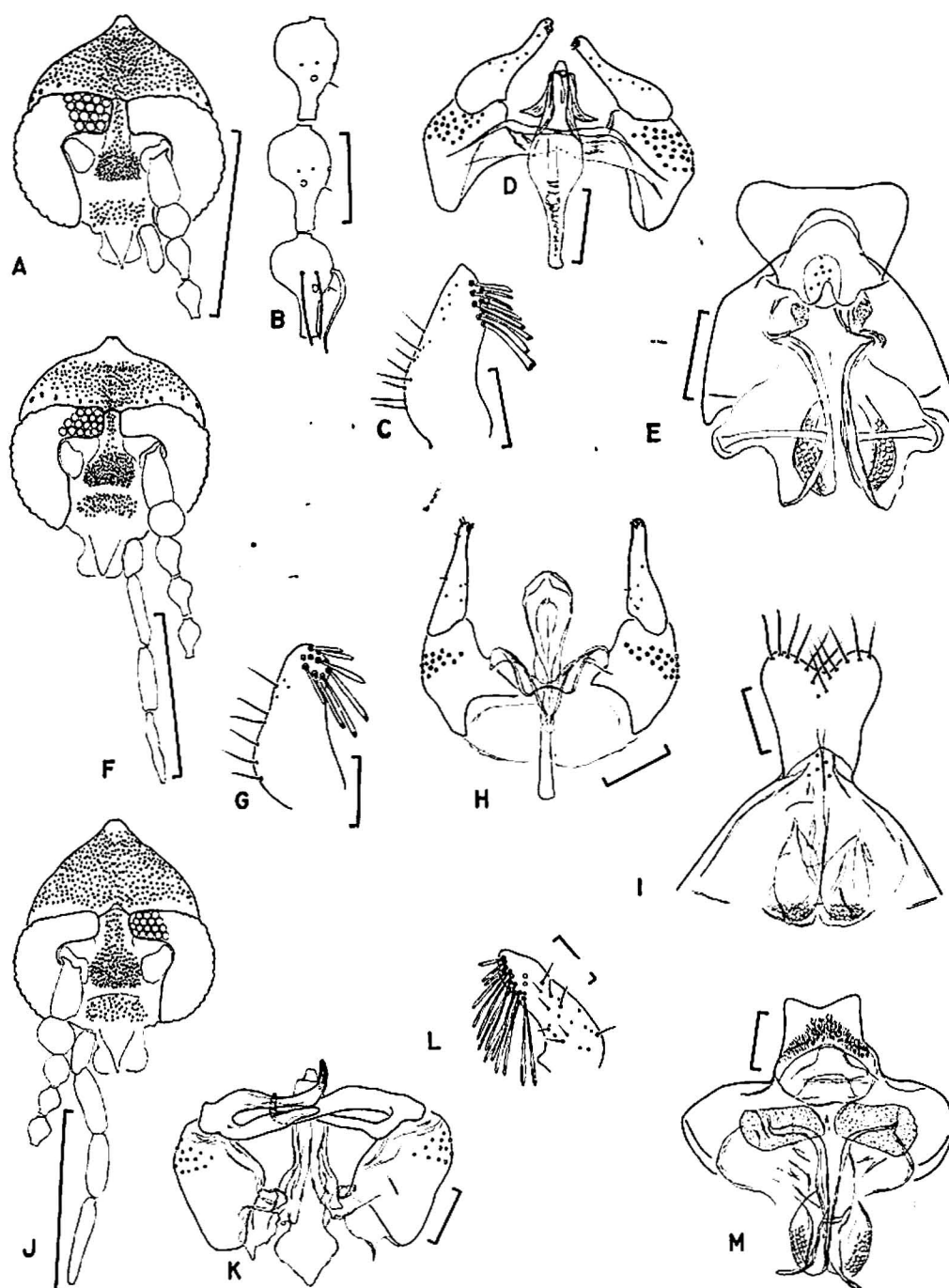


Fig. 28. a-e, *Telmatoscopus* (*Nototelmatoscopus*) *sisypus*: a, ♂ head; b, ♂ antenna; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-i, *Telmatoscopus* (*Nototelmatoscopus*) *longicrus*: f, ♂ head; g, ♂ surstyle; h, ♂ genitalia, dorsal; i, ♀ genitalia. j-m, *Telmatoscopus* (*Nototelmatoscopus*) *hirsutus*: j, ♂ head; k, ♂ genitalia, dorsal; l, ♂ surstyle; m, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

spur on midline, eye bridge with 4 rows of facets; vertex $2.5 \times$ width of eye bridge, sides rounded, occiput extended into conical projection with indentation on midline; frons with trapezoidal patch of hair, median band an irregular double row extending to upper row of facets; palpus with segment 1 bulbous, ratio=7:13:13:16. Antenna with scape $1.5 \times$ pedicel; flagellum with basal internodes short, distal internodes at least $1/2 \times$ nodes. Wing with Sc free, not joining R_1 ; radial fork a little basad of medial; Cu ending beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to rounded apex, bearing 4 short bristles; surstyle short, straight, bearing 11 or 12 tenacula.

Wing length=1.65-1.67 mm, width=0.60-0.65 mm.

♀. Eyes separated by 2.5-3.5 facet diameters, projection on vertex not as prominent as in ♂. Genitalia as figured; apical lobe of subgenital plate longer than wide; spermatheca faint, reticulate on basal surface; cercus very long, $2.5 \times$ length of subgenital plate.

Wing length=1.65-1.75 mm, width=0.62 mm.

Holotype ♂, allotype ♀ (BISHOP 7235): NW New Guinea, Bokondini, 1300 m, 16-23.XI. 1961, wet rocks in swift stream, L. & S. Quate. Paratypes (BISHOP, USNM): 3 ♂♂, 2 ♀♀, same data as types.

55. **Telmatoscopus (Nototelmatoscopus) hirsutus** Quate and Quate, new species Fig. 28j-m.

♂. Eyes widely separated by 4 facet diameters, eye bridge with 4 rows of facets, interocular suture broadly inverted V-shaped, vertex $3 \times$ width of eye bridge, sides nearly straight and sloping to pointed occiput with only a slight emargination before apex, which is indented on midline; frons with trapezoidal patch of hair, median band wide, consisting of about 6 irregular rows and extending to upper eye margin; palpus scaly, ratio of segments=7:11:11:15. Antenna with scape $1.5 \times$ pedicel; flagellum with short internodes, segment 1 without internode, distal internodes less than $1/2 \times$ nodes. Thorax without patagium. Wing with Sc free, not attached to R_1 ; radial fork basad of medial; Cu ending beyond medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle bearing long, digitiform appendage at base which is armed with about 6 small spines at apex, style slender, sharply curved near apex and darkly sclerotized beyond curve; surstyle short, straight, tapering to acute apex, bearing numerous (about 20) tenacula, most of which feathered at tips.

Antenna=0.85 mm, wing length=1.62 mm, width=0.75 mm.

♀. Similar to ♂. Eyes very widely separated by 5.5 facet diameters; vertex $3.5 \times$ width of eye bridge. Genitalia as figured; apical lobe of subgenital plate about as wide as long; spermatheca reticulate over most of surface.

Wing length=1.57 mm, width=0.65 mm.

Holotype ♂, allotype ♀ (BISHOP 7236): NW New Guinea, Kebar Val., 4-31.I.1962, Malaise trap, L. & S. Quate.

The bifurcate dististyle of the male genitalia is unusual in the subgenus *Nototelmatoscopus* and is found in only one other species (*baitabagensis*). The shape of the appendage and the dististyle proper differs considerably in the two species as is shown in the illustrations.

56. **Telmatoscopus (Nototelmatoscopus) repandus** Quate and Quate, new species Fig. 29g-k.

♂. Eyes separated by 1.5 facet diameters, eye bridge with 4 rows of facets, interocular suture forming obtuse angle; vertex $3 \times$ width of eye bridge, sides rounded and occiput extended into small, conical projection with indentation on midline, hairs on anterior part of vertex much denser than remainder; frons with triangular patch of hair, median band consisting of double row which extends to suture; ratio of palpal segments=10:15:14:?. Antenna with scape $1.5 \times$ pedicel; flagellum

with internodes short, flagellar segment 1 with very short internode, distal internodes less than $1/2 \times$ nodes. Thorax without patagium. Wing with Sc ending free, not attached to R_1 , radial fork basad of medial and R_{2+3} short; Cu ending well beyond medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle long and slender, sickle-like, aedeagus and parameres forming arrow-shaped structure; surstyle rather long, curved at base, bearing about 26 tenacula.

Antenna=0.95 mm, wing length=2.02 mm, width=0.85.

♀. Unknown.

Holotype ♂ (BISHOP 7237): NW New Guinea, Mulik Riv., 10 km W of Archbold Lake, 1050 m, 4.XII.1961, L. Quate.

The dense patch of hairs on the anterior part of the vertex is an unusual feature which is only known in *repandus* and at once separates this species from other of *Nototelmatoscopus*; although the female is unknown it is not unlikely that it shares this feature with the male. The male genitalia, especially the sickle-like dististyle and arrow-shaped aedeagus and parameres are also distinct features of this species.

57. **Telmatoscopus (Nototelmatoscopus) baitabagensis** Quate and Quate, new species
Fig. 29a-f.

♂. Eyes widely separated by 4 facet diameters, eye bridge with 4 rows of facets, interocular suture arched and thickened in center; vertex $3 \times$ width of eye bridge, sides rounded, occiput slightly elevated into small projection with indentation on midline; frons with triangular hair patch, median band wide, consisting of about 6 irregular rows which extend to suture; palpus densely haired, ratio of segments=6:10:9:13. Antenna with scape $1.5 \times$ pedicel; flagellum with short internodes, segments 1, 2 and 3 with internodes obsolescent, distal internodes less than $1/2 \times$ nodes. Thorax without patagium. Wing membrane infuscate; Sc ending free, not attached to R_1 , radial fork basad of medial; Cu ending beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle with digitiform appendage at base which bears cluster of spines at apex, style slender and curving over distal half, sclerotized over entire length; surstyle straight, tapering to small but rounded point, bearing 14 tenacula, long basal ones feathered at tips.

Antenna=0.81 mm, wing length=1.47 mm, width=0.55.

♀. Similar to ♂. Eyes separated by 3.5-4 facet diameters. Genitalia as figured; apical lobe of subgenital plate very broad, sides a little sinuate, apex curved on either side of concavity; spermatheca rather small, reticulate over entire surface.

Antenna=0.53-0.60 mm, wing length=1.35-1.50 mm, width=0.47-0.55.

Holotype ♂, allotype ♀ (BISHOP 7238): NE New Guinea, Baitabag, 1.XII.1964, W.A. Steffan. Paratypes (BISHOP, USNM): 3 ♀♀, same data as types.

The bifurcate dististyle and slender, sclerotized dististyle proper of the male genitalia and the broad apical lobe of the female subgenital plate are distinctive of *baitabagensis*. This species is similar to *hirsutus* in that both species have the bifurcate male dististyle, but the whole feature of the genitalia of the male as well as the female are quite distinct in the two species, as is shown in the illustrations.

58. **Telmatoscopus (Nototelmatoscopus) empheres** Quate and Quate, new species
Fig. 30a-e.

♂. Eyes separated by little less than 3 facet diameters, eye bridge with 4 rows of facets, interocular suture forming obtuse angle; vertex $3 \times$ width of eye bridge, sides steeply sloping to rounded occiput which is not extended into projection; frons with triangular patch of hair, sides merge uninterrupted with wide median band which extends to upper eye margin; palpus 1 a little enlarged,

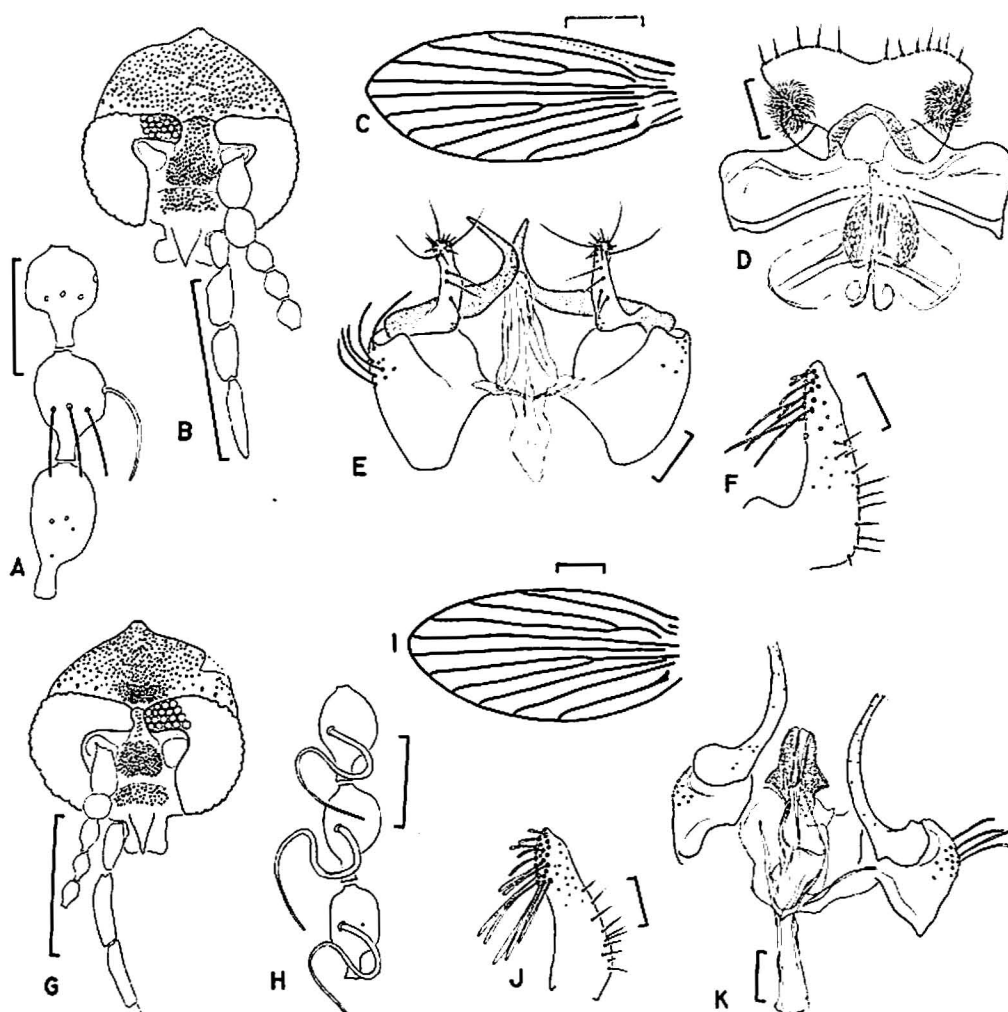


Fig. 29. a-f, *Telmatoscopus* (*Nototelmatoctopus*) *baitabagensis*: a, ♂ antenna, b, ♂ head; c, ♂ wing; d, ♀ genitalia; e, ♂ genitalia, dorsal; f, ♂ surstyle. g-k, *Telmatoscopus* (*Nototelmatoctopus*) *repandus*, ♂: g, head; h, antenna; i, wing; j, surstyle; k, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

ratio=6:10:9:13. Antenna with scape 1.5× pedicel; flagellum with internodes short, basal internodes lacking, distal internodes much less than 1/2× nodes. Thorax without patagium. Wing with Sc ending free, not attached to R_1 ; radial fork basad of medial; R_2 interrupted at base; Cu ending little beyond medial fork. Fore femur shorter than tibia. Genitalia as figured; dististyle modified, short and broad, ending in 2 apices, inner one rounded and bearing 3 bristles, outer one digitiform and bearing 6 bristles and 2 more slender ones, also thick bristle between 2 apices; surstyle rather long, a little curved, apex acute, with 12 tenacula.

Antenna=0.71 mm, wing length=1.40 mm, width=0.50 mm.

♀. Similar to ♂. Eyes separated by 2.5 facet diameters; interocular suture forming smaller

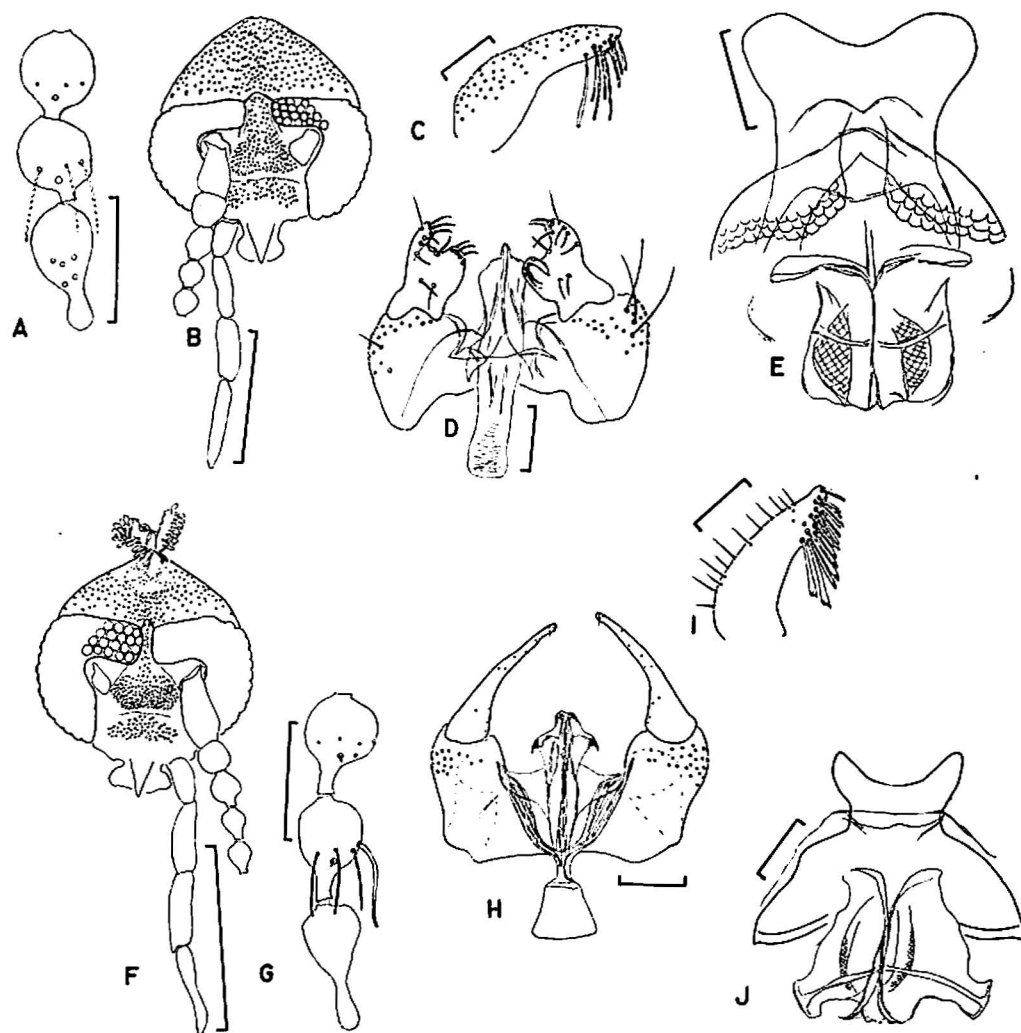


Fig. 30. a-e, *Telmatoscopus* (*Nototelmatoctopus*) *empheres*: a, ♂ antenna tip; b, ♂ head; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-j, *Telmatoscopus* (*Nototelmatoctopus*) *obtusallatus*: f, ♂ head; g, antenna tip; h, ♂ genitalia, dorsal; i, ♂ surstyle; j, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

angle and apex of vertex more projecting than in ♂. Genitalia as figured; spermatheca hemispherical, lightly reticulate.

Antenna=0.71-0.73 mm, wing length=1.35-1.45 mm, width=0.50-0.57 mm.

Holotype ♂, allotype ♀ (BISHOP 7239): NE New Guinea, Baitabag, 1.XII.1964, W.A. Steffan. Paratypes (BISHOP, USNM): 2 ♀♀, same data as types.

59. *Telmatoscopus* (*Nototelmatoctopus*) *obtusallatus* Quate and Quate, new species
Fig. 30f-j.

♂. Eyes narrowly separated by 1 facet diameter, eye bridge wide, with 4 rows of facets, inter-

ocular suture with inverted, U-shaped piece on midline; vertex $2 \times$ width of eye bridge, sides evenly rounded, occiput area with a large invagination, pair of membranous sense organs covered with spatulate hairs; frons with trapezoidal patch of hair, median band an irregular double row extending to upper eye margin, straight, oblique suture from antennal fossa to inner eye margin; ratio of palpal segments=8:11:12:14. Antenna with scape $2 \times$ pedicel; basal flagellar internodes very short, distal internodes about $1/2 \times$ nodes. Thorax without patagium. Wing with Sc ending free, not joined to R_1 ; radial fork basad of medial; R_2 interrupted at fork; Cu ending little beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle slender, evenly tapering to blunt apex which bears number of setae; surstyle straight, tapering, bearing about 30 tenacula, basal ones feathered at tips.

Antenna=0.85 mm (0.82–0.87), wing length=1.50 mm (1.47–1.52), width=0.57 mm (0.55–0.60).

♀. Similar to ♂. Eyes separated by 1.5–2 facet diameters; vertex without invaginated pocket or sense organs. Genitalia as figured; apical lobe of subgenital plate in form of inverted arch; spermatheca reticulate over most of surface.

Antenna=0.66 mm (0.64–0.69), wing length=1.55 mm (1.47–1.65) width=0.58 mm (0.55–0.62).

Holotype ♂, allotype ♀ (BISHOP 7240): NE New Guinea, Baitabag, I.XII.1964, W.A. Steffan. Paratypes (BISHOP, USNM, BMNH, CSIRO): 11 ♂♂, 7 ♀♀, same data as types; 1 ♀, NE New Guinea, Maprik area, 160 m, 26.VIII.1957, D.E. Hardy; 1 ♀, NE New Guinea, Lae, 6. VII.1957, Hardy.

Subgenus *Eutelmatoscopus* Satchell

Telmatoscopus (*Eutelmatoscopus*) Satchell, 1953, Austr. J. Zool. 1: 406.

Moderate-sized species often with spotted wings.

Eye bridges separated. Antenna 16-segmented, ascoids single, very long and coiled, rarely bifurcate; internodes long; terminal segments not reduced. ♂ without sense organs on head.

Wing moderately broad, often spotted at forks and vein tips; R_s usually ending in or near acute apex; radial fork distad of medial; R_{2+3} originates at or beyond apex of 1st basal cell; Cu usually ends near level of medial fork. Patagia absent. ♂ surstyle with less than 10 tenacula; aedeagus usually small and furcate; ♀ subgenital plate usually strongly bilobed.

Type-species. *Telmatoscopus spiralifer* Tonnoir, by orig. desig.

Range. Philippines, Borneo, New Guinea, Australia.

This is the subgenus most closely related to the nominate subgenus. The two groups share such characters as the long, coiled ascoids, long antenna internodes, and the furcate ♂ aedeagus.

KEY TO NEW GUINEA SPECIES OF EUTELMATOSCUS

1. Vertex of head short, height on midline equal to or less than width of eye bridge..... 2
- Vertex of head higher than width of eye bridge 3
- 2(1). Large species, wing length more than 2 mm; wing unspotted; M_2 with strong spur at fork;
 ♂ surstyle with 4 tenacula62. **panergus**
 Smaller species, wing length less than 2 mm; M_2 without spur; ♂ surstyle with 6 tenacula.....
 63. **decussatus**
- 3(1). Wing spotted, prominent spots at least at vein tips 4
- Wing unspotted; Cu apex well beyond level of medial fork.64. **crenigus**
- 4(3). Sc extending well beyond base of R_{2+3} , enlarged distally 5
- Sc extending only to level of base of R_{2+3} , or little beyond, but not enlarged distally 8

- 5(4). R_{2+3} originating at apex of 1st basal cell 6
 R_{2+3} originating beyond apex of 1st basal cell60. **syncretus**
- 6(5). Palp 4 longer than 3 8
 Palp 4 shorter than or equal to 3; ♀ subgenital plate unilobed with weak apical concavity61. **huangae**
- 7(6). R_5 ending in wing apex; forks not thickened and spotted; ♂ aedeagus furcate distally.....
65. **acrobeles**
 R_5 ending little beyond apex; forks thickened and unspotted; ♂ aedeagus arrow-shaped distally66. **oxybeles**
- 8(4). R_{2+3} originating near apex of 1st basal cell; wing strongly spotted 9
 R_{2+3} originating well beyond apex of 1st basal cell; Cu ends at level of medial fork67. **stellatus**
- 9(8). ♂ surstyle with 4 or 5 tenacula10
 ♂ surstyle with 6 tenacula69. **mergellatus**
- 10(9). ♂ surstyle with 4 tenacula68. **steffani**
 ♂ surstyle with 5 tenacula70. **tersaceps**

60. **Telmatoscopus (Eutelmatoscopus) syncretus** Quate and Quate, new species Fig. 31a-f.

Wings spotted at vein tips, R_4 ending in acute apex, with marked curvature at tip of Sc.

♀. Eyes separated by 1.5-2 facet diameters eye bridge with 4 rows of facets, interocular suture curved; vertex much higher than width of eye bridge; frons with rectangular patch of hairs and wide band extending posteriorly between eyes, widening at upper part of eyes; palpus 1 cylindrical, ratio=10:16:13:17. Antenna with scape 2× pedicel; flagellum with internodes short on basal segments, less than length of node, lengthening distally until distal nodes are longer than internodes. Wing with definite spots at vein tips and faint spots at forks; R_4 ending in apex; radial fork distad of medial; R_{2+3} originating beyond apex of 1st basal cell; Sc extending beyond base of R_{2+3} , enlarged apically; Cu ends before or at level of medial fork. Fore femur clearly longer than tibia. Genitalia as figured; spermatheca heavily sclerotized and reticulate.

Antenna=1.13 mm (1.07-1.27) wing length=2.17 mm (1.90-2.40) width=0.78 mm (0.65-0.87).

♂. Wing smaller than and antenna larger than in ♀. Eyes separated by 1 facet diameter. Head and thorax without sense organs. Genitalia as figured; dististyle enlarged basally and suddenly constricted to terminate in attenuate point; aedeagus broad with lateral margins well defined, apex membranous and inflated with pair of heavily sclerotized spots near midline; surstyle nearly straight, rather short, with 10 short tenacula.

Antenna=1.52 mm, wing length=2.21-2.25 mm, width=0.82 mm.

Holotype ♀, allotype ♂ (BISHOP 7241): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 78 ♀♀, 1 ♂, same data.

This species is similar to *T. townsvillensis* Taylor (Tonnoir 1952: 433), an Australian species. *T. syncretus* differs from *townsvillensis* in lacking the characteristic supernumerary appendage at the base of the palpus and more greatly inflated base of the dististyle in the male; the apical concavity of the female subgenital plate in *syncretus* is more deeply excavated than in *townsvillensis* and apparently the spermathecae are more heavily sclerotized and reticulated. The wing venation seems much the same in the two species, but apparently *townsvillensis* lacks the spots at the vein tips; however, the close similarity of the two species in other respects would indicate the spots may be present in *townsvillensis* and were overlooked in the redescription.

61. **Telmatoscopus (Eutelmatoscopus) huangae** Quate and Quate, new species Fig. 31g-i.

Wing with R_4 ending in acute apex, spots in vein tips and radial fork.

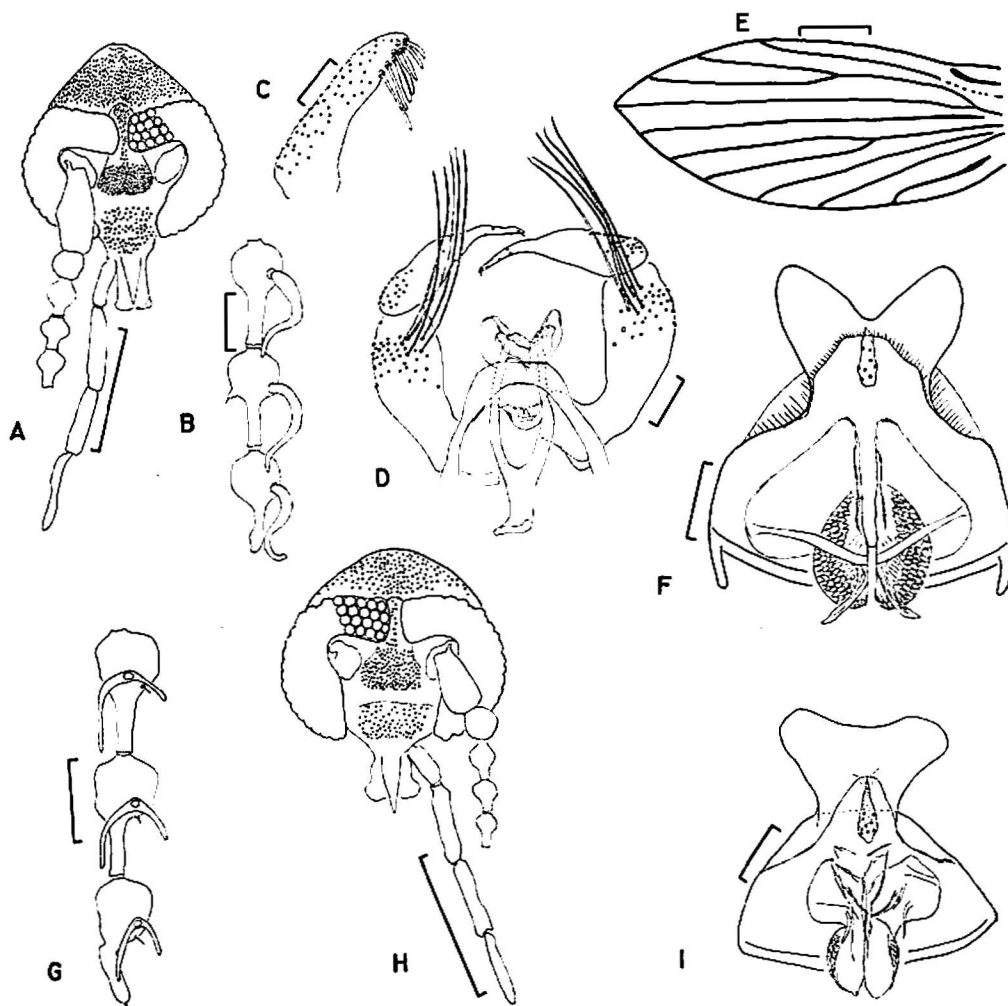


Fig. 31. a-f, *Telmatoscopus (Eutelmatoscopus) syncretus*: a, ♂ head; b, ♂ antenna tip; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ wing; f, ♀ genitalia. g-i, *Telmatoscopus (Eutelmatoscopus) huangae*, ♀: g, antenna tip; h, head; i, genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

♀. Eyes separated by about 1 facet diameter, bridge with 4 rows of facets, interocular suture curved; vertex higher than width of eye bridge; frons covered with triangular patch of hair extending posteriorly in irregular double row to interocular suture; palpus I cylindrical, ratio=7:16:16:16. Antenna with scape 2.5× pedicel; flagellar segments with basal internodes shorter than nodes, progressively lengthening distal internodes longer than nodes; ascoids U-shaped. Wing with spots at vein tips and radial fork; R_1 ending in acute apex; radial fork distad of medial; R_{2+3} originates at base of 1st basal cell; Sc extending beyond base of R_{2+3} ; Cu ends before level of medial fork. Fore femur longer than tibia. Genitalia as figured; apical lobe of subgenital plate unilobed with shallow apical concavity, spermatheca weakly sclerotized.

Antenna=1.15–1.32 mm, wing length=1.80–2.50 mm, width=0.67–0.97 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7242): NE New Guinea, Baitabag, 1.XII.1964, W.A. Steffan. Paratypes (BISHOP): 1 ♀, same data as holotype; 2 ♀♀, 15 km W of Lae, 23.IV.1965, Malaise trap, Y.M. Huang & W.A. Steffan; 1 ♀, Busu R., E of Lae, 100 m, 14.IX.1955, Gressitt; 1 ♀, Wau, 1200 m, 13-17.XII.1961, Malaise trap, J. Sedlacek.

The wing venation of this species is similar to that of *syncretus*, as is the head and antenna. The differences between *huangae* and *syncretus* lie chiefly in the female genitalia; the subgenital plate of *huangae* is unilobed with a weak apical concavity, while the plate of *syncretus* is strongly bilobed with a V-shaped apical concavity, and there are differences in the structures on the inner face of the plate and in the spermatheca as shown in the illustrations.

It is with pleasure that we dedicate this species to Miss Yiau-Min Huang.

62. **Telmatoscopus (Eutelmatoscopus) panergus** Quate and Quate, new species Fig. 32a-e.

Large, pale species with unspotted wings; R_5 ending in acute apex; M_4 with spur at fork; vertex short.

♂. Eyes separated by less than 1 facet diameter, bridge with 4 rows of facets, interocular suture V-shaped with enlargement at apex; frons with triangular patch of hairs, median band of hairs consisting of single irregular row which extends to upper row of facets but not reaching upper eye margin; vertex shorter than width of eye bridge; palpus 1 about $1/2 \times 2$, cylindrical, ratio=8:17:17:21. Antenna with scape $2 \times$ pedicel; flagellar segments with large, eccentric nodes, internodes long, longer than nodes. Wing pale, without spots; R_5 ending in acute apex; radial fork well distad of medial; M_4 with strong spur at fork; R_{2+3} originates at apex of first basal cell; Sc extending beyond base of R_{2+3} , not enlarged apically; Cu ending at level of medial fork. Fore femur little shorter than tibia, ratio=55:57. Genitalia as figured; coxite elongate and moderately slender; aedeagus small Y-shaped; surstyle long, slightly curved, thick at base but tapering to small apex, with 4 tenacula.

Antenna=1.62 mm, wing length=2.32 mm, width=0.90 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7243): NW New Guinea, Sibil Val, 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

This species is separable from other New Guinea *Eutelmatoscopus* by the short vertex, unspotted wings, large size, R_5 ending in wing apex, and genitalic characters.

63. **Telmatoscopus (Eutelmatoscopus) decussatus** Quate and Quate, new species Fig. 32f-j.

Moderate-sized species with strongly spotted wings, vertex short and occiput rounded; R_5 ending in acute apex.

♂. Eyes separated by 1 facet diameter, bridge with 4 rows of facets, interocular suture weak, V-shaped; vertex very short, shorter than width of eye bridge, occiput rounded and flattened; frons with triangular patch of hairs, median band sparse, a single irregular row of hairs extending above eye bridge and widening at apex; palpus 1 less than $1/2 \times 2$, slightly inflated, ratio=6:14:14:19. Antenna with scape $2 \times$ pedicel; flagellum with basal internodes subequal to nodes, progressively lengthening distally and distal internodes longer than nodes. Wing with strong spots at tips of veins; R_5 ending in acute apex; radial fork little distad of medial; R_{2+3} originating at apex of 1st basal cell; Sc ending at about level of R_{2+3} base, a little enlarged distally; Cu ending little beyond level of medial fork. Fore femur same length as tibia. Genitalia as figured; coxae long and slender, dististyle especially slender; aedeagus small, Y-shaped; surstyle long and slender, with 6 tenacula.

Antenna=1.01 mm, wing length=1.72 mm, width=0.62 mm.

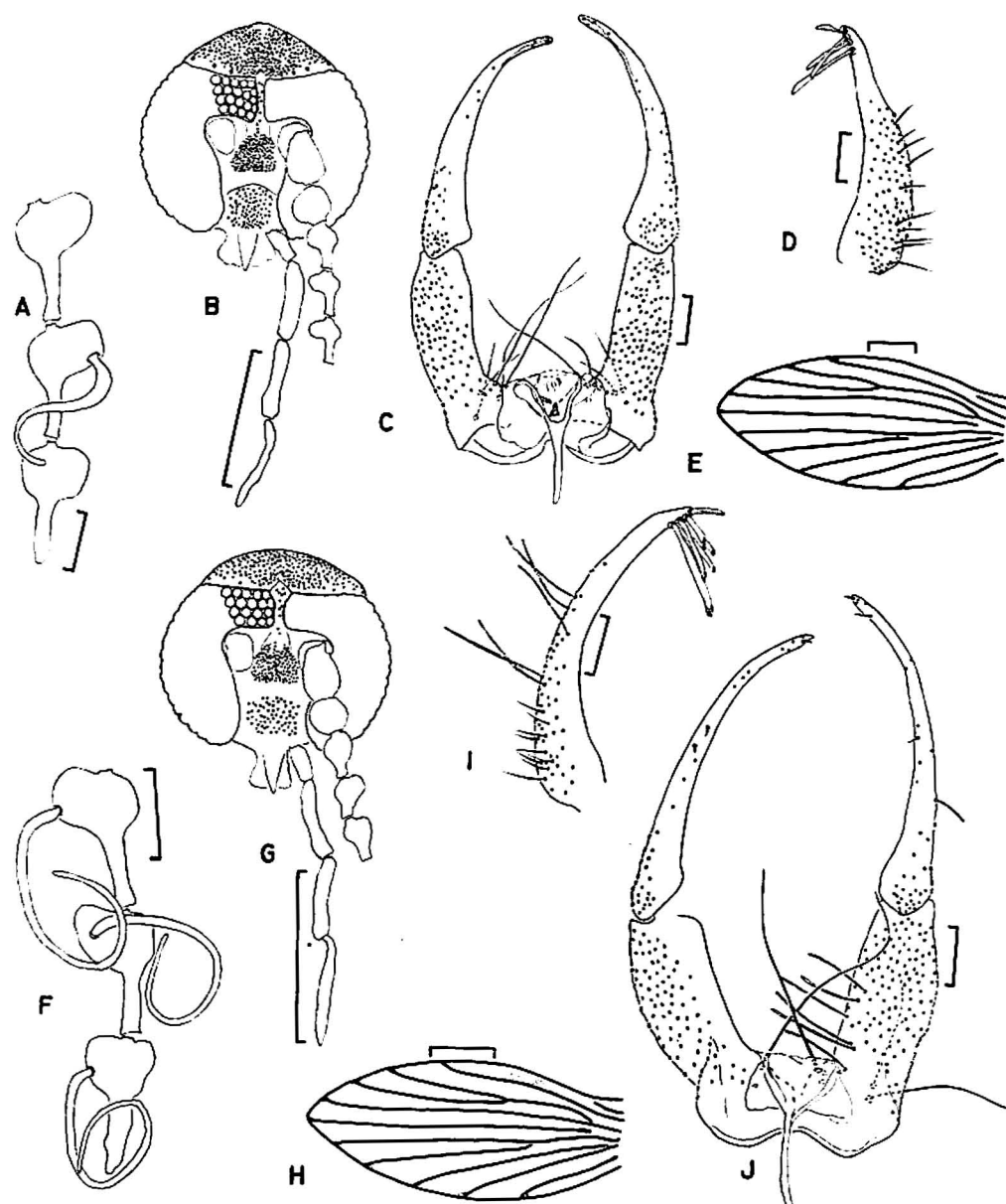


Fig. 32. a-e, *Telmatoscopus* (*Eutelmatoscopus*) *panergus*, ♂: a, antenna tip; b, head; c, genitalia, dorsal; d, surstyle; e, wing. f-j, *Telmatoscopus* (*Eutelmatoscopus*) *decussatus*, ♂: f, antenna tip; g, head; h, wing; i, surstyle; j, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7244): NE New Guinea, Wau, 1200 m, 18.XII.1961, light trap, L. & S. Quate.

The wing pattern and genitalia of *decussatus* resembles that of some of the following species but the small, flattened vertex is distinctive of this species.

64. **Telmatoscopus (Eutelmatoscopus) crenigis** Quate and Quate, new species Fig. 33a-e.

Wing unspotted, R_s ending in acute apex.

♂. Eyes separated by 1.5-2 facet diameters, bridge with 4 rows of facets, interocular suture broadly, inverted V-shaped; vertex higher than width of eye bridge, occiput bluntly pointed; frons with triangular patch of hairs, median band a double row extending to suture and widening posteriorly; palpus 1 less than $1/2 \times 2$, slightly inflated, ratio=7:19:17:20, but 3 variable and may be little

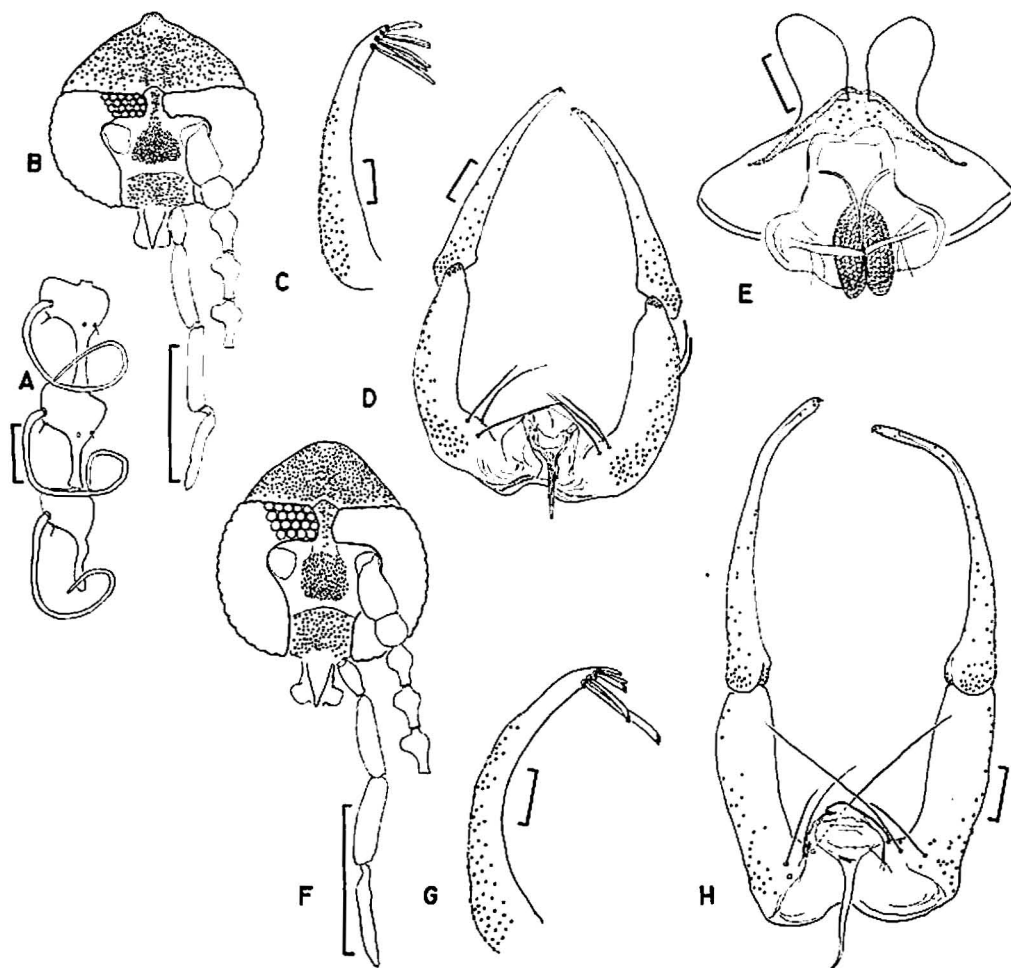


Fig. 33. a-e, *Telmatoscopus (Eutelmatoscopus) crenigis*: a, ♂ antenna tip; b, ♂ head; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-h, *Telmatoscopus (Eutelmatoscopus) acrobeles*, ♂: f, head; g, surstyle; h, genitalia, dorsal. Scale lines of heads=0.3 mm; others=0.05 mm.

longer than 2. Antenna with scape about $2 \times$ pedicel; flagellum with large eccentric nodes, internodes longer than nodes. Wing unspotted; R_5 ends in acute apex; radial fork well distad of medial; R_{2+3} originating little distad of apex of 1st basal cell; Sc extending little beyond base of R_{2+3} , not enlarged apically; Cu extending beyond level of medial fork. Fore femur shorter than tibia. Genitalia as figured; coxite elongate and slender, dististyle tapering throughout length; aedeagus small and Y-shaped; surstyle elongate and tapering, with 4 tenacula.

Antenna=1.55–1.67 mm, wing length=1.87–2.30 mm, width=0.80–0.87 mm.

♀. Similar to ♂. Eyes separated by 2 facet diameters. Genitalia as figured; apical lobes of subgenital plate paddle-shaped, well separated.

Antenna=1.50 mm, wing length=2.25–2.50 mm, width=0.87–0.90 mm.

Holotype ♂ (AMNH): NE New Guinea, Mount Michael, Kimi Creek camp, 1980 m, 27. VIII.1959, 6th Archbold Exped; allotype ♀ (AMNH): NE New Guinea, Okapa area, Purosa camp, 1950 m, 30.IX.1959, L.J. Brass. Paratypes (AMNH, Bishop): 7 ♂♂, 1 ♀, same data as holotype; 2 ♀♀, same data as allotype; 2 ♂♂, 2 ♀♀, NE New Guinea, Mount Wilhelm, Pengagl camp, 2770 m, 8–10.IX.1959, 6th Arch. Exped.

The unspotted wings, high vertex, and R_5 ending in wing apex distinguishes *crenigus* from other known species of *Eutelmatoscopus*.

65. **Telmatoscopus (Eutelmatoscopus) acrobeles** Quate and Quate, new species Fig. 33f–h.

Wing with spots at vein tips, R_5 ending in acute apex.

♂. Eyes separated by little more than 1 facet diameter, bridge with 4 rows of facets, interocular suture arched; vertex higher than width of eye bridge; frons with rectangular patch of hairs, median band of 2 rows extending to suture and widening posteriorly; palpus 1 about $1/2 \times 2$, ratio=8:17:17:20. Antenna with scape $2 \times$ pedicel; flagellum with nodes eccentric, internodes longer than nodes. Wing with spots at ends of veins; R_5 ending in acute apex; radial fork well distad of medial; M_2 with small spur at fork; R_{2+3} originating at apex of 1st basal cell; Sc extending beyond origins of R_{2+3} , not enlarged apically; Cu extending beyond level of medial fork. Genitalia as figured; coxite long and slender, dististyle with attenuate and slightly curved distal part; aedeagus small and Y-shaped; surstyle elongate and tapering, with 5 tenacula.

Antenna=1.40 mm, wing length=2.02 mm, width=0.77 mm.

♀. Unknown.

Holotype ♂ (Bishop 7245): NW New Guinea, Bokondini, 1300 m, 16–23.XI.1961, light trap, L. & S. Quate.

66. **Telmatoscopus (Eutelmatoscopus) oxybeles** Quate and Quate, new species Fig. 34a–d.

Wing with spots at vein tips, R_5 ending little beyond acute apex.

♂. Eyes separated by about 1 facet diameter, bridge with 4 rows of facets, interocular suture very faint, broadly V-shaped; vertex higher than width of eye bridge; frons with triangular patch of hair, median band largely a single, interrupted row, not extending above upper eye margin; palpus 1 about $1/2 \times 2$, 4 longer than 3, ratio=8:16:16:20. Antenna with scape about $2 \times$ pedicel; flagellum with nodes large and eccentric, basal internodes shorter than nodes, lengthening distally and distal internodes longer than nodes. Wing with spots at vein tips and at forks; R_5 ending little beyond acute apex; radial fork little distad of medial fork; R_2 thickened and sometimes partly spurred at fork, M_2 spurred at fork; R_{2+3} originating at apex of 1st basal cell; Sc extending little beyond origin of R_{2+3} , thickened distally; Cu extending beyond level of medial fork. Fore femur and tibia equal in length. Genitalia as figured; basistyle short and broad, dististyle short but slender; aedeagus with solid, arrow-shaped apical part and slender basal stem; surstyle of moderate length, tapering, with 4 tenacula.

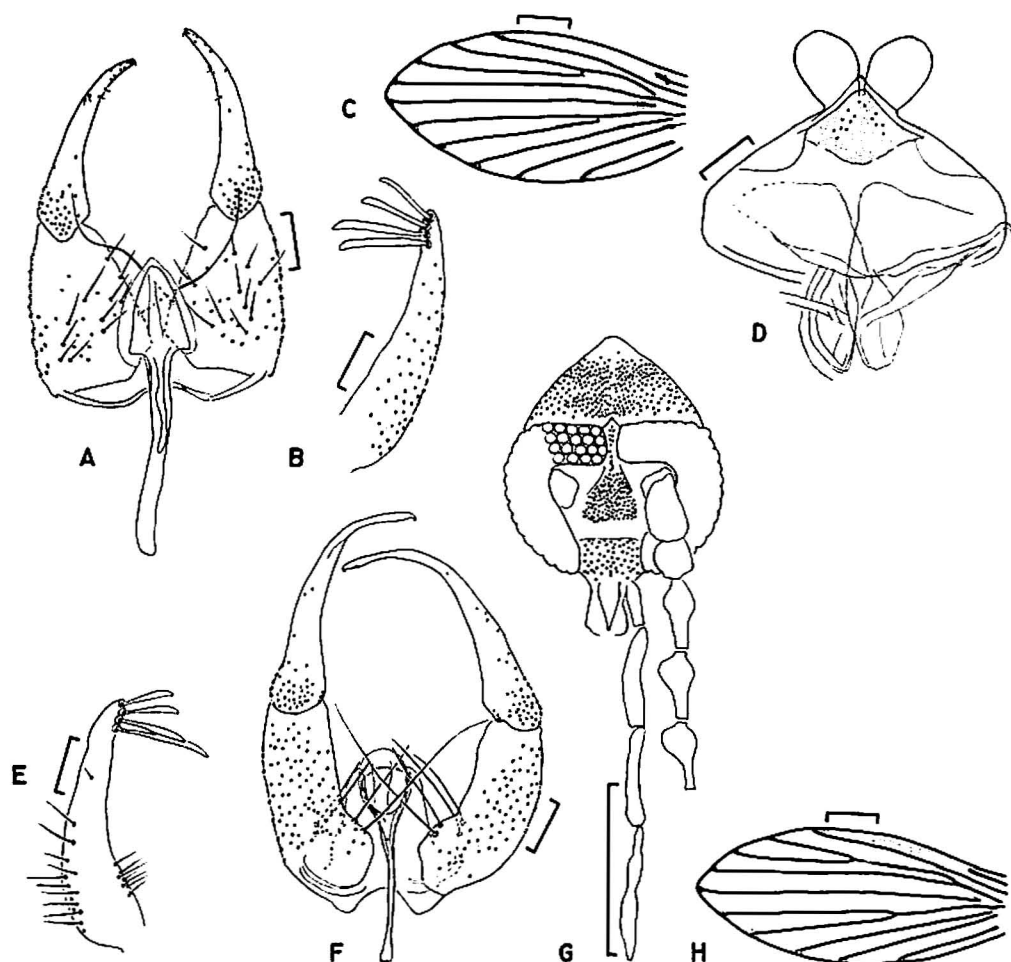


Fig. 34. a-d, *Telmatoscopus (Eutelmatoscopus) oxybeles*: a, ♂ genitalia, dorsal; b, ♂ surstyle; c, ♂ wing; d, ♀ genitalia. e-h, *Telmatoscopus (Eutelmatoscopus) stellatus*, ♂: e, surstyle; f, genitalia, dorsal; g, head; h, wing. Scale lines of head & wings=0.3 mm; others=0.05 mm.

Wing length=2.10-2.15 mm, width=0.85-0.90 mm.

♀. Similar to ♂. Wing apex more rounded than in ♂. Genitalia as illustrated; lobes of sub-genital plate paddle-shaped and narrowly separated.

Wing length=1.90 mm, width=0.85 mm.

Holotype ♂, allotype ♀ (BISHOP 7246): New Britain, Gazelle Pen, Malmalwan-Vunakanau, 11-13.V.1956, light trap, J.L. Gressitt. Paratype (BISHOP): 1 ♂, same data.

T. oxybeles is a distinctive species with R_5 ending a little beyond the wing apex and the arrow-shaped male aedeagus.

67. ***Telmatoscopus (Eutelmatoscopus) stellatus*** Quate and Quate, new species Fig. 34e-h. Small species, wing faintly spotted at vein tips, R_5 ending in acute apex.

♂. Eye bridges separated by about 1 facet diameter, bridge with 4 rows of facets, interocular

suture broadly, inverted V-shaped; vertex higher than eye bridge; frons with triangular patch of hairs, median band a double row of hairs extending to upper eye margin; palpus 1 less than $1/2 \times 2$, ratio=8:18:16:22. Antenna with scape about $2 \times$ pedicel; flagellum with basal node pyriform, remaining nodes larger and eccentric; internodes longer than nodes. Wing with R_5 ending in acute apex; radial fork distad of medial fork; R_{2+3} originating well distad of apex of 1st basal cell; Sc ends little before level of origin of R_{2+3} ; Cu ending at level of medial fork. Fore femur much shorter than tibia. Genitalia as illustrated; dististyle very attenuate apically and curved; aedeagus small and Y-shaped; surstyle slightly curved, with 4 tenacula.

Antenna=1.70 mm, wing length=2.17 mm, width=0.80 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7247): NW New Guinea, Sibil Val., 1245 m, 18.X—8.XI.1961, light trap, L. & S. Quate.

68. **Telmatoscopus (Eutelmatoscopus) steffani** Quate and Quate, new species Fig. 35a-f. Small species with strongly spotted wings, R_5 ending in acute apex.

♂. Eyes separated by about 2 facet diameters, bridge small, with 4 rows of facets, interocular suture weak, inverted V-shaped or arched; frons with hair patch trapezoidal, median band extending above upper eye margin; vertex much higher than narrow eye bridge; palpus 1 inflated, $1/2 \times 2$, ratio=5:10:14:17. Antenna with scape $2 \times$ pedicel; flagellum with basal node symmetrical, other nodes slightly asymmetrical, basal internode shorter than node but others longer than nodes. Wing membrane infuscate; spots at vein tips; radial fork distad of medial; R_{2+3} originating at apex of 1st basal cell; Sc ends at about level of origin of R_{2+3} ; Cu ending at about level of medial fork. Genitalia as figured; coxites elongate; aedeagus small and Y-shaped; surstyle elongate and tapering, with 4 tenacula, basal 2 tenacula feathered at tips.

Antenna=1.00 mm (0.95–1.04), wing length=1.32 mm (1.22–1.45), width=0.50 mm (0.47–0.55).

♀. Similar to ♂. Eyes separated by 3 facet diameters. Genitalia as illustrated; apical lobes of subgenital paddle-shaped, well separated.

Antenna=0.92 mm (0.87–1.00), wing length=1.48 mm (1.35–1.60), width=0.52 mm (0.47–0.57).

Holotype ♂, allotype ♀ (BISHOP 7248): PAPUA, Murua, 5–25 m, 17–22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (USNM, AMNH, BMNH, CSIRO): 21 ♂♂, 34 ♀♀, same data as holotype; 1 ♀, NE NG, Baitabag. 1.XII.1964, Steffan.

Other specimens: 5 ♂♂, 1 ♀, NW New Guinea, Vogelkop, Kebar Val, 550 m, 4–31.I.1962, light trap, L. & S. Quate.

69. **Telmatoscopus (Eutelmatoscopus) mergellatus** Quate and Quate, new species Fig. 35g-h.

Small species with strongly spotted wings, R_5 ending in acute apex. ♀. Unknown.

♂. Eyes separated by 2 facet diameters, bridge with 4 rows of facets, small, interocular suture rounded; vertex much higher than narrow eye bridge; frons with hair patch trapezoidal, median band extending to upper eye margin; palpus 1 inflated, about $1/2 \times 2$, ratio=5:11:11:15. Antenna with scape $2 \times$ pedicel; flagellum as in *steffani*. Wing membrane infuscate; R_5 ending in acute apex; radial fork distad of medial; R_{2+3} originating at apex of 1st basal cell; Sc ending at origin of R_{2+3} ; Cu ending at about level of medial fork. Fore femur longer than tibia. Genitalia as figured; coxite elongate; aedeagus Y-shaped; surstyle rather slender, with 6 tenacula, all but apical 1 feathered at tips and longer than usual.

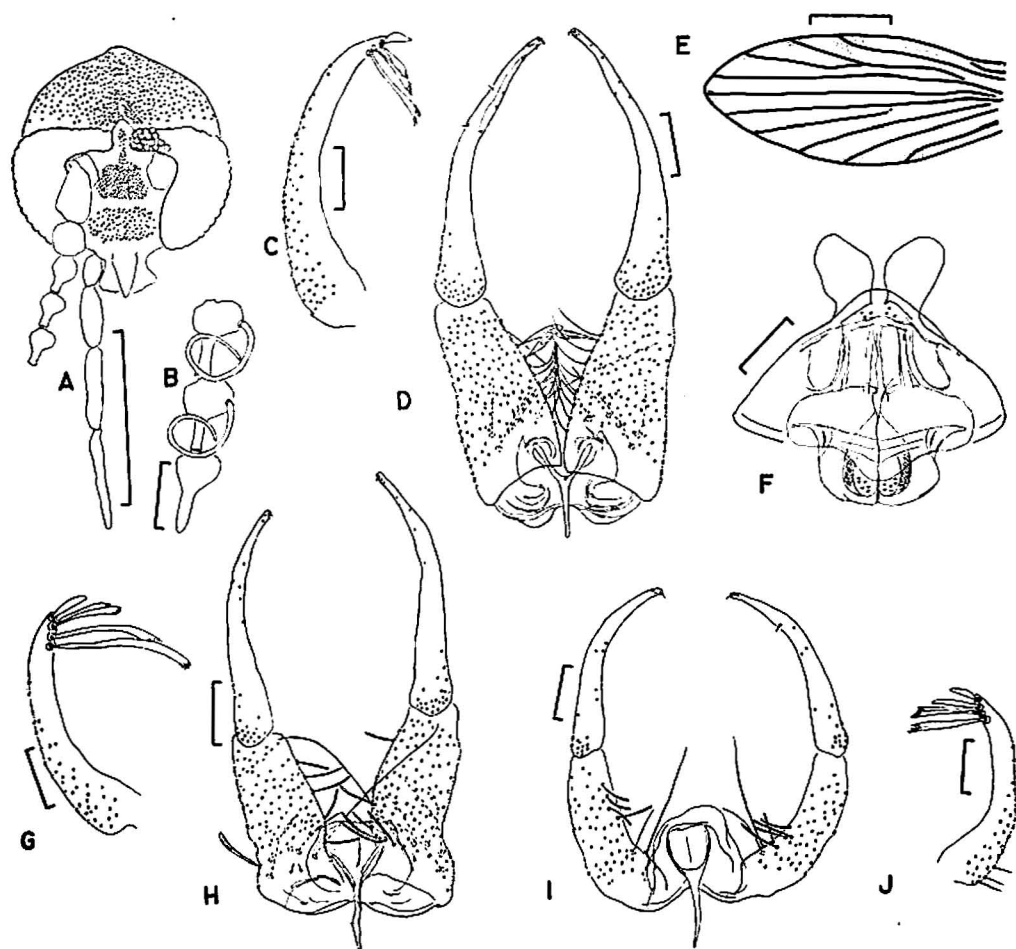


Fig. 35. a-f, *Telmatoscopus (Eutelmatoscopus) steffani*: a, ♂ head; b, ♂ antenna tip; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♂ wing; f, ♀ genitalia. g-h, *Telmatoscopus (Eutelmatoscopus) mergellatus*, ♂: g, surstyle, h; genitalia, dorsal. i-j, *Telmatoscopus (Eutelmatoscopus) tersaceps*, ♂: i, genitalia, dorsal; j, surstyle. Scale lines of head & wing=0.3 mm; others=0.05 mm

Antenna=0.92-1.04 mm, wing length=1.25-1.42 mm, width=0.45-0.55 mm.

Holotype ♂ (BISHOP 7249): NW New Guinea, Archbold L, 760 m. 26.XI-3.XII.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, AMNH): NW New Guinea, Hollandia, 23. VIII.1955, light trap, J.L. Gressitt; 1 ♂, Hollandia, VII-XII.1961, at light, R.T. Simon Thomas; 4 ♂♂, NE New Guinea, Lae-Bulolo Rd, Oomsis, 100 m, 26.IV.1959, 6th Arch. Exped.

70. ***Telmatoscopus (Eutelmatoscopus) tersaceps*** Quate and Quate, new species Fig. 35i-j. Small species with strongly spotted wings, R_s ending in acute apex. ♀. Unknown.

♂. Eyes separated by 2 facet diameters, bridge with 4 rows of facets, small, interocular suture arched; vertex much higher than narrow eye bridge; frons with hair patch trapezoidal, median band extending to upper eye margin; palpus 1 inflated, 2×2 , ratio=5:9:10:13. Antenna as in

steffani. Wing strongly spotted at vein tips; R_5 ending in acute apex; radial fork distad of medial; R_{2+3} originates at apex of 1st basal cell; Sc ends at base of R_{2+3} ; Cu not extending to level of medial fork. Fore femur shorter than tibia. Genitalia as illustrated; coxite elongate, dististyle curved apically; aedeagus trident, enclosed with sac-like protuberance; surstyle slender, with 5 tenacula, basal 3 feathered at tips.

Antenna=0.95 mm, wing length=1.27–1.37 mm, width=0.45–0.52 mm.

Holotype ♂ (Bishop 7250): NW New Guinea, Vogelop, Kebar Val, 550 m, 4–31.I.1962, Malaise trap, L. & S. Quate. Paratype: 1 ♂, same data.

The above 3 species are similar in size, wing venation and shape of the head; they are distinguished from other New Guinea *Eutelmatochus* by the small, strongly spotted wings, and small eye bridges. Characters for differentiating the 3 species from each other are found largely in the genitalia as indicated in the key and illustrated in the figures.

Subgenus *Clogmia* Enderlein

Clogmia Enderlein, 1937, Deutsch. Ent. Zeitschr. 1936: 87.—Quate, 1963, Trans. Roy. Ent. Soc. Lond. 115: 189.

Large species with broad, acutely pointed wings.

Eye bridges separated. Antenna with ascoids usually multibranched or palmate, occasionally V-shaped; internodes long and slender, terminal segments not reduced. Palpus 2 often longer than 3. Male without sense organs on head.

Wing broad; R_5 ending in acute apex; radial fork variable, from little basad to little distad of medial; Sc ends near base of R_{2+3} ; Cu ending at or beyond level of medial fork. Patagia absent. Surstyle with multiple tenacula.

Type-species. *Psychoda albipunctatus* Williston, by original designation (as "*C. albipennis* (Williston)", a typographical error for *albipunctatus*).

Range. Cosmopolitan.

KEY TO PAPUAN SPECIES OF CLOGMIA

1. Apex of Cu well beyond level of medial fork 2
- Apex of Cu at or near level of medial fork 9
- 2 (1). Radial fork basad or on level of medial; ♂ ascoids multibranched 3
- Radial fork distad of medial; ascoids U-shaped; ♂ aedeagus racquet-shaped; a widespread, tropicopolitan species 71. **albipunctatus**
- 3 (2). Palpus 2 much longer than 4, about 1.5× 4
- Palpus 2 subequal to 4, at most but little longer 5
- 4 (3). Wing not unusually broad, length more than 2× width; palpus 2 less than 2× 3...72. **contortulus**
- Wing very broad, length about 1.7× width; palpus 2 very long, 2× 3 73. **membragus**
- 5 (3). M_2 with spur at fork 6
- M_2 without spur at fork 7
- 6 (5). Palps 2 & 3 equal in length; large species with infuscated wings, wing length more than 2 mm 74. **convolvulus**
- Palpus 2 longer than 3; smaller species, wing length less than 2 mm.....75. **fissurellus**
- 7 (5). Head protuberant in occipital area 8
- Head smoothly rounded over entire margin 76. **flebilis**
- 8 (7). Palpus 1 about 1/3× 2; suture from antennal fossa extending uninterrupted to lower eye margin 77. **zeus**
- Palpus 1 about 1/2× 2; suture from antennal fossa not extending to lower eye margin..... 78. **batillinus**

- 9 (1). Radial fork distad of medial.....10
 Radial fork on same level as or basad of medial11
 10 (9). Palps 2 and 3 subequal in length; M_2 with spur at fork; eyes separated by about 2 facet diameters79. **colobrinus**
 Palp 2 longer than 3; M_2 without spur; eyes separated by about 1 facet diameter.....80. **aurigeneus**
 11 (9). Palpus 2 considerably longer than 4.....12
 Palps 2 and 4 equal in length or 2 shorter; wing pale, veins lightly sclerotized.....81. **gratus**
 12(11). Hair patch on frons trapezoidal, not evenly merging with median band; Sc not greatly enlarged13
 Hair patch on frons triangular and evenly merging with median band; Sc very large, except terminus; wing membrane infusate; ♂ eyes separated by 2.5 facet diameters.....82. **volvistylus**
 13(12). ♂ dististyle slender and without inflated area, surstyle with 10 tenacula; ♀ genitalia as illustrated83. **falcatus**
 ♂ dististyle with inflated area near center, surstyle with 8 tenacula; ♀ unknown.....84. **consentaneus**

71. *Telmatoscopus* (*Clogmia*) *albipunctatus* (Williston)

Telmatoscopus albipunctatus (Williston).—del Rosario, 1936, Philip. J. Sci. 59: 559—Quate, 1955, Univ. Cal. Publ. Ent. 10: 185; 1959, Ins. Micronesia (Bishop Mus.) 12 (4): 452; 1965, Pac. Ins. 7: 845.

DISTRIBUTION. Tropicopolitan.

NW NEW GUINEA: Hollandia, 22.XII.61–2.I.1962, L. & S. Quate, ♂♂, ♀♀; S side of Humboldt Bay, 29.XII.1961, in cave with bats, L. Quate, ♂♂, ♀♀; Wissel Lakes, Enarotali, 1830 m, 7.VII.1962, N. Wilson, 1 ♂, 2 ♀♀; Volgekop, Bomberi, 700–900 m, 4.XI.1959, J.L. Gressitt, 1 ♂; Biak, Kampong Landbouw, 40 m, 16.VII.1957, D.E. Hardy, 1 ♀; Biak, 24.VI.1959, T.C. Maa, ♀♀.

NE NEW GUINEA: Madang, 21.XI.1964, W.A. Steffan, bred from coconut shell; 15 km N of Madang, 26.XI.1964, Steffan; Morobe Distr, Allison Place, 3.IV.1965, Y.M. Huang, 1 ♂; Kundiawa, 4.I.1965, Steffan, 1 ♂, 2 ♀♀; Wau, 2.IV.1965, Steffan and 17.XII.1961, L. & S. Quate, ♂♂, ♀♀; Papua: Murua, 10.XII.1964, Steffan.

NEW IRELAND: Kavieng, 3.VI.1959, W. Peters.

This common, widespread species is recognized by the large size, broad, pointed wings bearing both forks nearer to the base than usual in the subgenus *Clogmia*, the U-shaped ascoids, and distinctive male and female genitalia. The color pattern of black spots on the wings and white leg bands in live or pinned specimens are also distinguishing features.

T. albipunctatus is one of the most common psychodids found in and near human habitations. It breeds in a wide variety of niches which contain water and decaying organic matter, such as sewage disposal plants, latrines, abattoir wastes, and compost heaps. That its wide distribution is due to human transport is supported by its abundance in coastal areas and absence from many inland areas.

72. *Telmatoscopus* (*Clogmia*) *contortulus* Quate and Quate, new species Fig. 36a–d.

♂. Eyes separated by $1.5-2 \times$ facet diameters, bridge with 4 rows of facets, interocular suture broadly, inverted V-shaped; vertex about $1.5 \times$ width of eye bridge, occiput slightly protuberant; frons with rectangular patch of hairs, median band a double or triple row extending to suture and widening posteriorly; palpus 2 large, larger than other segments, ratio=13:29:20:21. Antenna with scape about $1.3 \times$ pedicel; flagellum with basal internodes smaller than nodes; ascoids palmate,

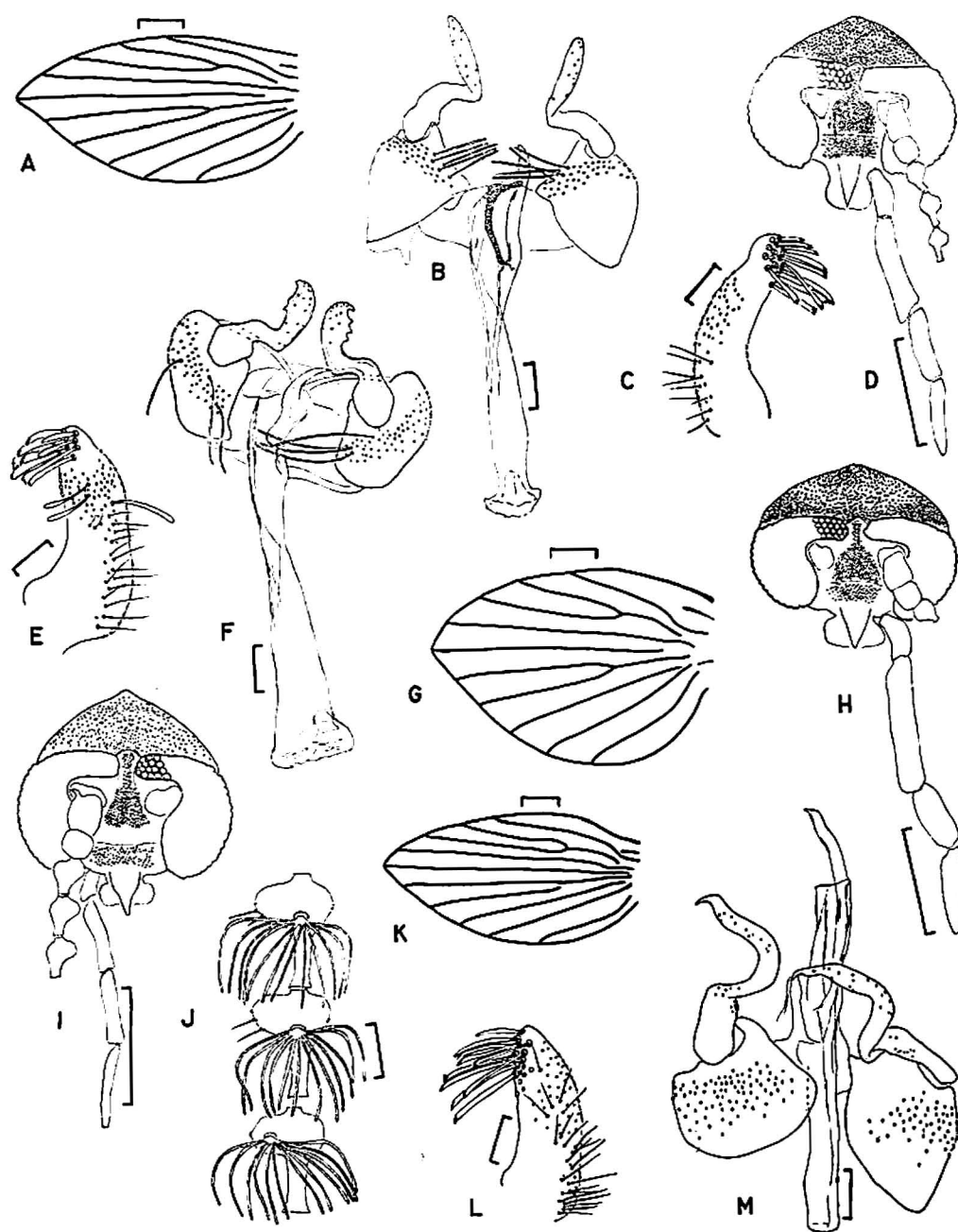


Fig. 36. a-d, *Telmatoscopus (Clogmia) contortulus*, ♂: a, wing; b, genitalia, dorsal; c, surstyle; d, head. e-h, *Telmatoscopus (Clogmia) membragus*, ♂: e, surstyle; f, genitalia, dorsal; g, wing; h, head. i-m, *Telmatoscopus (Clogmia) convolvulus*, ♂: i, head; j, antenna; k, wing; l, surstyle; m, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

with many branches. Wing unspotted; radial fork little basad of medial; Cu extending beyond level of medial fork. Fore femur little shorter than tibia. Genitalia as figured; dististyle curiously sinuate, curved on both horizontal and vertical planes; aedeagus large, asymmetrical, box-like with long, broad stem; surstyle thick and moderately long, apex little enlarged, bearing about 10 tenacula.

Wing length=2.25 mm, width=0.97 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7251): NW New Guinea, Vogelkop, Kebar Val., 4-31.I.1962, tree base, L. & S. Quate.

73. **Telmatoscopus (Clogmia) membragus** Quate and Quate, new species Fig. 36e-h.
Wing very broad and round.

♂. Eyes separated by 2 facet diameters, bridge with 4 rows of facets, suture arched; vertex $2.5\times$ narrow eye bridge, occiput slightly protuberant; frons with triangular patch of hair, median band a triple row extending almost to suture, widening posteriorly; palpus 2 very large, ratio=12:37:18:23. Antenna with scape about $1.5\times$ pedicel; flagellum with basal internodes very short; ascoids palmate. Wing very broad and rounded, less than $2\times$ as long as wide; radial fork little basad of medial; Cu extending well beyond level of medial fork. Genitalia as figured; dististyle roughly S-shaped, apical part enlarged and bearing several teeth on outer margin; aedeagus asymmetrical, apex a lightly sclerotized, pointed, curved piece, base long and broad; surstyle bearing about 12 tenacula.

Wing length=2.15 mm, width=1.30 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7522): NW New Guinea, Sarmi, 20-23.VII.1959, light trap, T.C. Maa.

The above two species, *contortulus* and *membragus*, differ from most New Guinea *Clogmia* by the longer Cu, which extend beyond the medial fork, and the large second palpal segment. These two species are easily separated from each other by the very broad wing of *membragus* and the entirely different structure of the male genitalia, especially the shapes of the dististyle and aedeagus.

74. **Telmatoscopus (Clogmia) convolvulus** Quate and Quate, new species Fig. 36i-m.
Wing infuscated, M_2 with spur.

♂. Eyes separated by a little more than 2 facet diameters, bridge with 4 rows of facets, interocular suture arched and weakened in center; vertex $2.5\times$ width of eye bridge, occiput pointed; frons with triangular patch of hairs which merge into broad median band extending nearly to suture; palps 2 and 3 equal in length, ratio=9:18:18:20. Antenna with scape $1.3\times$ pedicel; flagellum with basal internodes shorter than nodes, distal ones longer than nodes, nodes eccentric; ascoids large, palmate, branches numerous and irregular. Wing membrane infuscated; radial and medial forks on same level; M_2 spurred at base; Cu extending well beyond level of medial fork. Fore femur and tibia subequal in length. Genitalia as figured; dististyle sickle-shaped, slender but base enlarged; aedeagus asymmetrical, a rather straight tube with slightly curved, pointed apical part; surstyle short and thick with 12 tenacula.

Antenna=1.60 mm, wing length=2.75 mm, width=1.10 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7253): NE New Guinea, Mt Hagen, Tomba, 2450 m, 25.V.1963, J. Sedlacek.

The rather slender, large, infuscated wings with the spurred M_2 and distinctive genitalia separate *convolvulus* from other New Guinea *Clogmia*.

75. **Telmatoscopus (Clogmia) fissurellus** Quate and Quate, new species Fig. 37a-d.

Wing pale, M_2 spurred at base.

♀. Eyes widely separated by 3 facet diameters, bridge with 4 rows of facets, interocular suture rounded, weakened in center; vertex $2 \times$ width of eye bridge, occiput slightly indented; frons with rectangular patch of hair, median band wide and extending to interocular suture; palpus 2 little longer than 3, ratio=7:13:11:15. Antenna with scape but little longer than pedicel; flagellum with nodes generally shorter than internodes; ascoids palmate with few branches. Wing with membrane pale; radial and medial forks on same level; M_2 weakly spurred at base; Cu extending beyond level of medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate unilobed, weakly concave at apex.

Antenna=0.85, wing length=1.67 mm, width=0.72 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7254): Papua, Murua, 17-22.XII.1964, Malaise trap, W.A. Steffan.

76. **Telmatoscopus (Clogmia) flebilis** Quate and Quate, new species Fig. 37e-h.

♀. Eyes separated by 1.5 facet diameters, bridge with 4 rows of facets, interocular suture arched; vertex $2 \times$ width of eye bridge, evenly rounded across occipital area; frons with trapezoidal patch of hairs, median band a double row extending to suture and widening posteriorly; palpus 2 longer than 3, 1 very short, ratio=7:19:15:19. Antenna with scape little longer than pedicel; flagellum with basal 2 internodes obsolescent, distal internodes shorter than nodes; ascoids palmate. Wing membrane lightly infuscate; radial and medial forks on same level; Cu extending well beyond level of medial fork. Fore femur longer than tibia. Genitalia as figured; subgenital plate with pair of small lobes separated by wide concavity.

Antenna=1.10 mm, wing length=1.90 mm, width=0.75 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7255): NW New Guinea, Nabire, IX.1962, N. Wilson.

The above two species, known only from females, differ from other species of *Clogmia* in wing venation and head structures. Unfortunately, they cannot be associated with males, but are distinct enough to warrant describing and naming. The genitalia of the two differ significantly and would not be confused with each other or with other species.

77. **Telmatoscopus (Clogmia) zeus** Quate and Quate, new species Fig. 37 i-m.

Wing membrane pale and unmarked.

♂. Eyes separated by little more than 1 facet diameter, bridge with 4 rows of facets, interocular suture slightly arched; vertex $2 \times$ width of eye bridge, occiput slightly protuberant; frons with rectangular patch of hair, median band a triple row extending to suture; palpus 2 longer than 3, ratio=7:19:15:18. Antenna with scape little longer than pedicel; flagellum with nodes eccentric, basal internodes shorter than nodes, distal ones longer; ascoids palmate, with many branches. Wing membrane pale and unmarked; radial and medial forks on same level; Cu extending well beyond level of medial fork. Fore femur and tibia of equal length. Genitalia as figured; basistyle globular; dististyle with triangular base and straight, slender apical part, beaked at apex; aedeagus furcate at tip; surstyle straight, with 8 tenacula.

Antenna=1.35 mm, wing length=1.85 mm, width=0.77 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7256): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate.

The genitalia of this species differs from most other New Guinea *Clogmia* in the simple dististyle

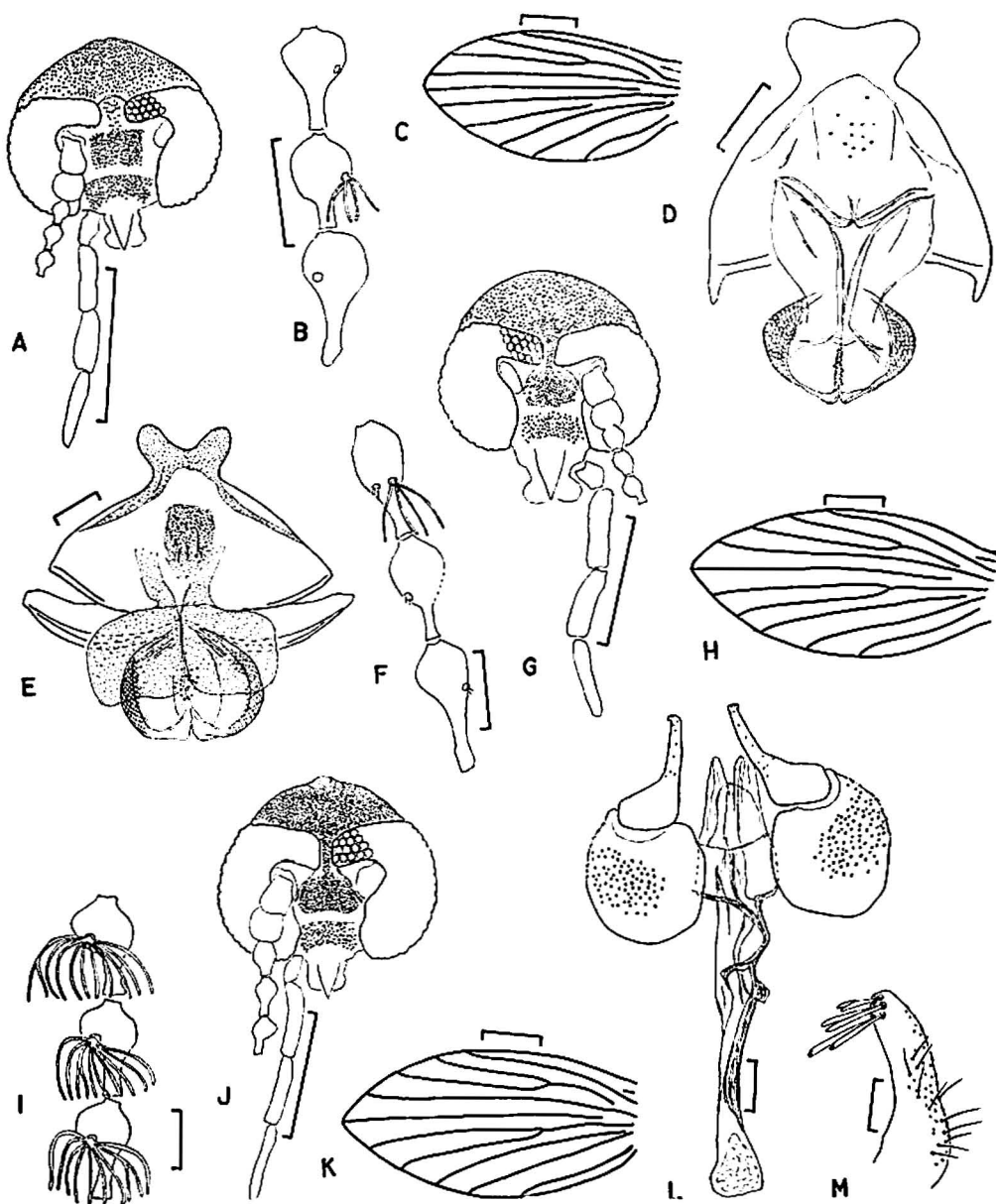


Fig. 37. a-d, *Telmatoscopus (Clogmia) fissurellus*, ♀: a, head; b, antenna tip; c, wing; d, genitalia. e-h, *Telmatoscopus (Clogmia) flebilis*, ♀: e, genitalia; f, antenna tip; g, head; h, wing. i-m, *Telmatoscopus (Clogmia) zeus*, ♂: i, antenna; j, head; k, wing; l, genitalia, dorsal; m, surstyle. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

which is straight and uncurved, in contrast to the more elaborate and complex dististyle of most other species.

78. **Telmatoscopus (Clogmia) batillinus** Quate and Quate, new species Fig. 38a-d.

♀. Eyes separated by 2 facet diameters, bridge with 4 rows of facets, interocular suture arched and thickened in center; vertex $2\times$ width of eye bridge, occiput broadly protuberant, protuberance with small apical concavity; frons with triangular patch of hair, median band an irregular triple band of hair extending almost to suture, suture extending obliquely from antennal fossa towards inner angle of eye bridge but not reaching eye; palpus 2 considerably longer than 3, ratio=11:12:16:21. Antenna with scape little longer than pedicel; flagellum with internodes shorter than nodes, nodes small and symmetrical, apiculus elongate; ascoids usually bifurcate but sometimes trifurcate. Wing membrane lightly infuscate; radial fork a little basad of medial; Sc extending well beyond level of medial fork. Fore femur longer than tibia. Genitalia as illustrated; apical part of subgenital plate spade-shaped; inner face with sclerotized, ovoid structure broadly joined to base of apical lobe.

Antenna=1.00-1.02 mm, wing length=2.00 mm, width=0.80 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7257): NW New Guinea, Hollandia, 26.XII.1961, tree trunk, S. Quate.

Paratype (BISHOP): 1 ♀, NW New Guinea, Kota Nica, near Hollandia, 24.XII.1961, tree trunk, S. Quate.

79. **Telmatoscopus (Clogmia) colobrinus** Quate and Quate, new species Fig. 38e-h.

♂. Eyes separated by 2 facet diameters, bridge with 4 rows of facets, interocular suture broadly, inverted V-shaped; vertex $2.5\times$ width of eye bridge, 2 rounded projections on ventral side before occiput; frons with triangular patch of hairs, median band a double row extending nearly to suture, widening posteriorly; palps 2, 3, and 4 subequal in length, ratio=8:15:15:15. Antenna with scape $1.3\times$ pedicel; flagellum with basal internodes shorter than nodes; ascoids palmate, with many branches. Wing membrane lightly infuscate; forks on same level; M_2 with small spur at base; Cu a little beyond level of medial fork. Fore femur and tibia equal in length. Genitalia as figured; dististyle curved, slender, but inflated distally and with short, curved beak at apex; aedeagus asymmetrical; surstyle slightly curved, with 8 tenacula.

Wing length=2.05 mm, width=0.90 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7258): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

The spurred M_2 and curved dististyle with its inflated apical part separate this species readily from other New Guinea *Clogmia*.

80. **Telmatoscopus (Clogmia) aurigeneus** Quate and Quate, new species Fig. 38 i-l.

Wing membrane pale, veins R_4 and M_{1+2} with unusual curvature at base little beyond apex of 1st basal cell.

♂. Eyes separated by little more than 1 facet diameter, eye bridge with 4 rows of facets, interocular suture slightly arched; vertex $1.2\times$ width of eye bridge, occiput flattened, without projection; frons with trapezoidal patch of hair, median band an irregular band extending almost to suture, oblique suture from antennal fossa towards inner margin of eye bridge but not reaching eye; palpus 2 much longer than 3, ratio=6:22:16:16 (palpus distorted and relative lengths of segments may be accurate). Antenna with scape little longer than pedicel; flagellum with basal internodes

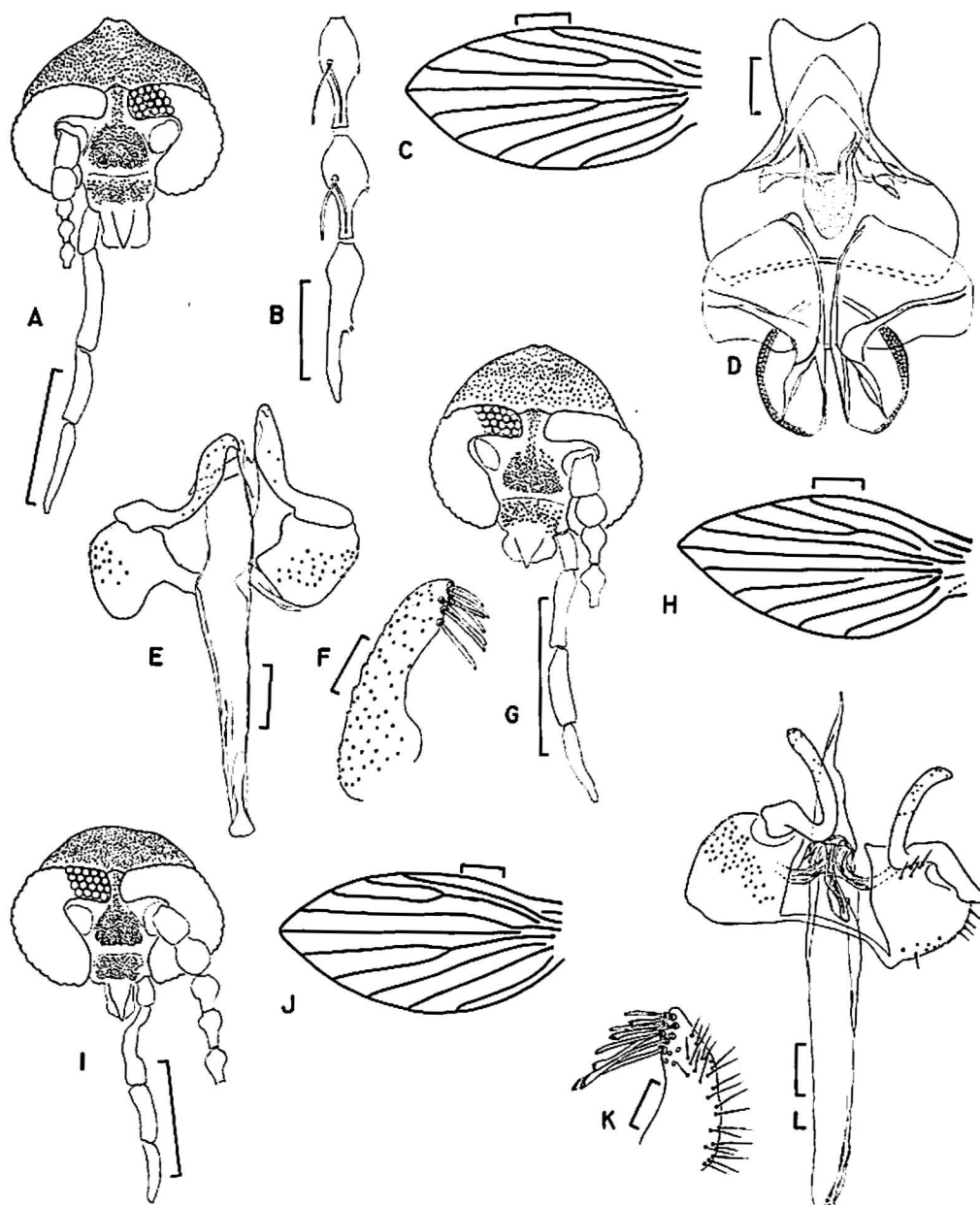


Fig. 38. a-d, *Telmatoscopus (Clogmia) batillinus*, ♀: a, head; b, antenna tip; c, wing; d, genitalia. e-h, *Telmatoscopus (Clogmia) colobrinus*, ♂: e, genitalia, dorsal; f, surstyle; g, head; h, wing. i-l, *Telmatoscopus (Clogmia) aurigenus*, ♂: i, head; j, wing; k, surstyle; l, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

thick and short, shorter than nodes, distal internodes more slender and longer than nodes; ascoids palmate, with many branches. Wing membrane pale, veins lightly sclerotized; radial and medial forks on about same level; basal parts of R_4 and M_{1+2} parallel along margin of basal cell, little beyond apex of basal cell diverging more markedly than usual; Cu ending little beyond level of medial fork. Fore femur and tibia subequal in length. Genitalia as figured; dististyle strongly curved, slender, not inflated apically; aedeagus asymmetrical and tapering to slender, lightly sclerotized, acutely pointed apex; surstyle short, nearly straight, with 8 tenacula, most of which feathered at tips.

Antenna=1.30 mm, wing length=2.37 mm, width=1.02 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7259): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, Malaise trap, L. & S. Quate.

The pale wing membrane and curvature of the bases of R_4 and M_{1+2} are unusual for this subgenus. The genitalia is similar to *colobrinus* but the dististyle is more strongly curved at the base and is not inflated in *aurigenus* as it is in *colobrinus*.

81. **Telmatoscopus (Clogmia) gratus** Quate and Quate, new species Fig. 39a-e.

Wing membrane pale, M_2 with small spur at base. ♀. Unknown.

♂. Eyes separated by 1-1.5 facet diameters, eye bridge with 4 rows of facets, interocular suture slightly curved; vertex about as high as width of eye bridge, nearly flat on occiput but with small protuberance at apex; frons with rectangular patch of hairs, median band a double row extending to suture and widening posteriorly; palpus 2 little longer than 3, ratio=8:14:12:14. Antenna with scape little longer than pedicel; flagellum with basal internodes short, shorter than nodes, distal internodes longer than nodes; ascoids palmate with many branches. Wing membrane pale, veins slightly sclerotized; radial and medial forks on about same level; M_2 with small spur at base; Cu extending little beyond level of medial fork. Genitalia as figured; dististyle slender and but slightly curved; aedeagus with heavily sclerotized lateral margins in 2 projections flanking sinuate apex; surstyle rather slender, bearing 7 tenacula.

Antenna=1.02 mm, wing length=1.47 mm, width=0.62 mm.

Holotype ♂ (BISHOP 7260): NE New Guinea, Wewak, 13.X.1957, light trap, J.L. Gressitt.

The pale wing with its lightly sclerotized veins is similar to the preceding species, *aurigenus*, but lacks the unusual curvature at the bases of R_4 and M_{1+2} of that species. Also, the genitalia of the two species are quite dissimilar.

82. **Telmatoscopus (Clogmia) volvistylus** Quate and Quate, new species Fig. 39f-j.

Large, dark brown species. ♀. Unknown

♂. Eyes separated by 2.5 facet diameters, eye bridge with 4 rows of facets, interocular suture gently arched; vertex $2.5 \times$ width of eye bridge, occiput extending into blunt point; frons with triangular patch of hairs merging into wide median band which extends to suture, with oblique suture extending from antennal fossa to inner margin of eye bridge but interrupted at about distal $1/3$; palpus 2 much longer than 3 and 4, ratio=10:26:16:18. Antenna with scape $1.5 \times$ pedicel; flagellum with eccentric nodes; basal internodes shorter than nodes, distal internodes longer; ascoids palmate with many branches. Wing membrane infuscated, more darkly infuscated in costal cell; radial and medial forks on same level; Sc enlarged but tapering to small apex; Cu extending little beyond level of medial fork. Fore femur shorter than tibia. Genitalia as figured; basistyle globular; dististyle strongly curved; aedeagus tubular, rather simple; surstyle nearly straight, with 12 tenacula.

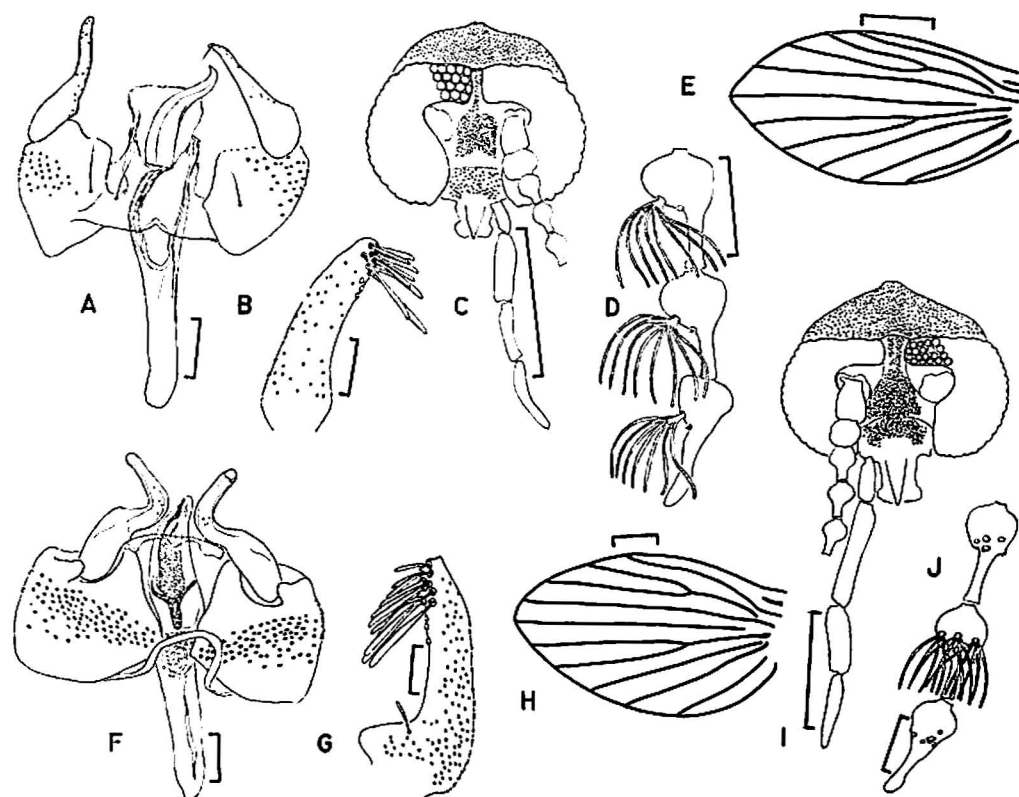


Fig. 39. a-e, *Telmatoscopus (Clogmia) gratus*, ♂: a, genitalia, dorsal; b, surstyle; c, head; d, antenna tip; e, wing. f-j, *Telmatoscopus (Clogmia) volvistylus*, ♂: f, genitalia, dorsal; g, surstyle; h, wing; i, head; j, antenna. Scale line of heads & wings=0.3 mm; others=0.05 mm.

Antenna=1.47 mm, wing length=2.32 mm, width=1.12 mm.

Holotype ♂ (BISHOP 7261): NW New Guinea, Vogelkop, Kebar Val, 550 m, 22-24.I.1962, Malaise trap, L. & S. Quate.

The large, infuscated wing and enlarged Sc, shape of the hair patch and the oblique suture on the frons, and the genitalic features will separate *volvistylus* from other related species of *Clogmia*.

83. *Telmatoscopus (Clogmia) falcatus* Quate and Quate, new species

Fig. 40a-f.

Wing membrane and veins pale.

♂. Eyes separated by 1.5 facet diameters, eye bridge with 4 rows of facets, interocular suture arched; vertex little less than 2× width of eye bridge, occiput flattened but a little protuberant; frons with trapezoidal patch of hair, median band an irregular double row extending to suture, interrupted near center of eye bridge, oblique suture from antennal fossa extending towards but not reaching inner eye margin; palpus 2 much longer than 3, ratio=8:18:13:15. Antenna with scape little longer than pedicel; basal internodes shorter than nodes, distal internodes longer, ascoids palmate, with many branches. Wing membrane pale, veins slightly sclerotized; radial and medial forks on same level; Cu ending at level of medial fork. Fore femur and tibia equal in length. Genitalia as figured; dististyle slender and strongly curved at base; aedeagus long, asymmetrical with

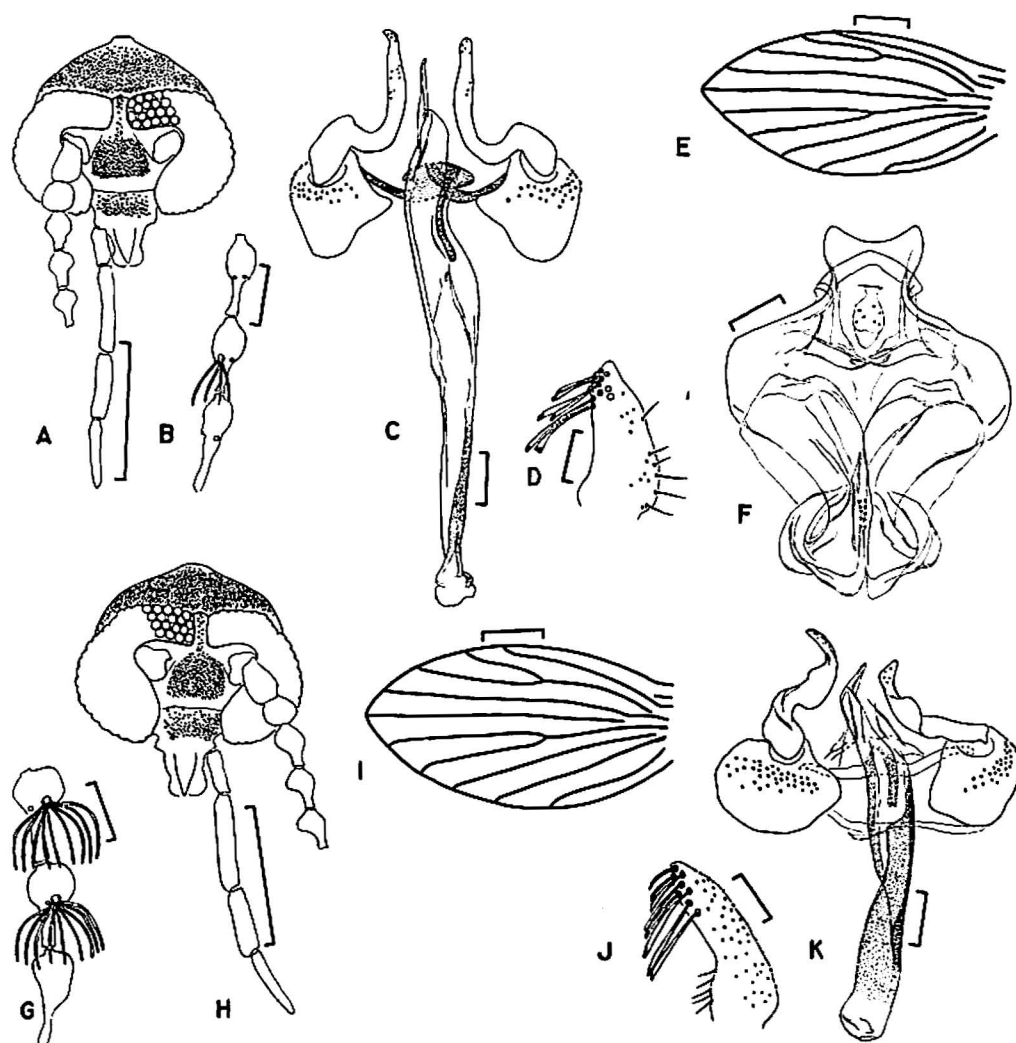


Fig. 40. a-f, *Telmatoscopus (Clogmia) falcatus*: a, ♂ head; b, ♀ antenna tip; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♂ wing; f, ♀ genitalia. g-k, *Telmatoscopus (Clogmia) consensuensis*, ♂; g, antenna; h, head; i, wing; j, surstyle; k, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

slender projection at apex; surstyle short and tapering to rounded point at apex, with 10 tenacula, which are feathered at tips.

Antenna=1.30 mm, wing length=2.00 mm, width=0.80 mm.

♀. Similar to ♂. Eyes separated by 2 facet diameters; antennal nodes smaller than ascoids with fewer branches than in ♂. Genitalia as illustrated. Antenna=1.15 mm, wing length=2.17 mm, width=0.85 mm.

Holotype ♂, allotype ♀ (BISHOP 7262): NW New Guinea, Hollandia, 26.XII.1961, tree trunk, S. Quate.

84. **Telmatoscopus (Clogmia) consentaneus** Quate and Quate, new species Fig. 40g-k.

Wing membrane and veins pale.

♂. Eyes separated by 1 facet diameter, eye bridge with 4 rows of facets, interocular suture slightly arched; vertex $1.5 \times$ width of eye bridge, occiput rounded but with slight protuberance at apex; frons with trapezoidal patch of hair, median band a double row extending to suture, oblique suture from antennal fossa towards inner margin of eye bridge but not reaching eye; palpus 2 much longer than 3, ratio=10:21:14:15. Antenna with scape little longer than pedicel; flagellum with nodes eccentric, basal internodes shorter than nodes but distal nodes longer; ascoids palmate, with many branches. Wing membrane pale, veins lightly sclerotized; radial and medial fork on same level; R_{2+3} a little enlarged and with marked curvature near center; Cu ending little beyond level of medial fork. Fore femur and tibia equal in length. Genitalia as figured; basistyle globular; dististyle S-shaped with inflation at distal 1/3; aedeagus broad, asymmetrical, tapering to attenuate, curved, unsclerotized apex; surstyle straight, with 8 tenacula.

Antenna=1.37 mm, wing length=1.87 mm, width=0.80 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7263): NW New Guinea, Kota Nica, near Hollandia, 24.XII.1961, tree trunk, S. Quate.

This species is similar to *falcatus* but differs in the distinct structure of the male dististyle and, less markedly, in the curvature of R_{2+3} . The two species, *consentaneus* and *falcatus*, have wing venation similar to *aurigeneus* but they differ in the relative position of the forks and genitalic features.

Subgenus **Rhadinoscopus** Quate and Quate, new subgenus

Small species with slender, lanceolate wings.

Eyes contiguous; eye bridge with 3 rows of facets. Antenna with ascoids multibranched; terminal 2 segments reduced and without internodes. Male without sense organs on head.

Wing narrow, lanceolate, R_5 ending in acute apex; membrane usually patterned; R_{2+3} originating well beyond apex of 1st basal cell; R_s pectinate; forks on same level, often spurred; Cu ending near level of forks. Patagia absent. Male surstyle elongate, with 3-6 tenacula; paramere usually with paired projections flanking aedeagus.

Type-species. *Telmatoscopus (Rhadinoscopus) paniscus* Quate and Quate, n. sp.; by present designation.

Range. Philippines, Borneo, New Guinea.

This subgenus is easily distinguishable from other subgenera of *Telmatoscopus* by the slender, lanceolate wings, the contiguous eyes, three rows of facets on the eye bridge, and the reduced terminal segments of the antenna.

While most of the species of *Rhadinoscopus* now known occur in New Guinea, a few Borneo and Philippine species also belong to this subgenus, but none are known in Australia.

KEY TO NEW GUINEA SPECIES OF RHADINOSCUS

1. Fore femur equal to or shorter than tibia 2
- Fore femur longer than tibia 5
- 2(1). Hairs on vertex evenly distributed 3
- Hairs on vertex denser on anteromedian area than on remainder 4
- 3(2). ♂ paramere consisting of pair of slender, acutely pointed lobes and pair of rounded lobes;
apical lobe of ♀ subgenital plate Y-shaped with thick, short stem.....85. **paniscus**
- ♂ paramere consisting of 2 pairs of rounded lobes; ♀ unknown94. **egregius**

- 4(2). ♂ surstyle with 3 tenacula, aedeagus snowshoe-shaped with acute apex; ♀ unknown.....86. **hemedopos**
 ♂ surstyle with 4 tenacula, aedeagus slender and parallel-sided; ♀ unknown87. **gerrulus**
- 5(1). Vertex with hairs over entire surface 6
 Vertex with hairs lacking on anteromedian area; basal flagellar nodes conspicuously
 eccentric and terminal 2 segments very small; ♂ paramere with 3 pairs of acute,
 sclerotized points88. **aristosus**
- 6(5). Hairs on vertex denser in anteromedian area than on remainder..... 7
 Hairs on vertex evenly distributed 8
- 7(6). ♂ surstyle with 6 tenacula; ♀ genitalia as in fig. 42m.....89. **paniscoides**
 ♂ surstyle with 4 tenacula; ♀ genitalia as in fig. 43e90. **insignis**
- 8(6). Males 9
 Females11
- 9(8). Dististyle longer than basistyle10
 Dististyle shorter than basistyle91. **ignavus**
- 10(9). Aedeagus widening distally92. **tubanus**
 Distal part of aedeagus parallel-sided93. **fratuelis**
- 11(7). Subgenital plate with U-shaped structure on inner face at base of apical lobe, group of
 setae within enclosed area; spermatheca with longitudinal striations92. **tubanus**
 Subgenital plate with V-shaped area on inner face, no setae in enclosed space; dense striations
 only distad of spermatheca91. **ignavus**

85. **Telmatoscopus (Rhadinoscopus) paniscus** Quate and Quate, new species Fig. 41a-f.

♂. Occiput protuberant and indented on midline, vertex with hairs evenly distributed over surface, 3.5-4× width of eye bridge; ratio of palpal segments=6:7:8:13. Antenna with node of 1st flagellar segment elongate, following nodes a little eccentric. Wing with forks usually with small spurs, forks on same level; Cu ending at level of medial fork. Fore femur shorter than tibia. Genitalia as figured; dististyle curved and tapering to acute apex; aedeagus slender; paramere consisting of a pair of slender, unsclerotized points and pair of rounded lobes; surstyle parallel-sided over most of distance, bearing 4 tenacula.

Antenna=1.08 mm (1.05-1.10), wing length=1.50 mm (1.37-1.62), width=0.37 mm (0.35-0.40).

♀. Similar to ♂. Segments of flagellum smaller than ♂. Genitalia as figured; subgenital plate covered with spatulate hairs, apical lobe Y-shaped with short, thick stem.

Antenna=0.68 mm (0.64-0.73), wing length=1.59 mm (1.47-1.70), width=0.39 mm (0.35-0.42).

Holotype ♂, allotype ♀ (BISHOP 7264): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI. 1961, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 73 ♂♂, 60 ♀♀, same data as types; 5 ♂♂, 3 ♀♀, NW New Guinea, Bokondini, 1300 m, 5-11, 16-23.XI. 1961, L. & S. Quate; 1 ♀, NW New Guinea, Archbold Lake, 760 m, 26.XI-3.XII.1961, L. & S. Quate.

86. **Telmatoscopus (Rhadinoscopus) hemedopos** Quate and Quate, new species Fig. 41g-k.

♂. Occiput flattened, vertex with hairs on anteromedian area denser than on rest of surface, 3× width of eye bridge; ratio of palpal segments=5:6:7:13. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric. Wing with forks usually spurred, radial fork little basad of medial; Cu ending little basad of medial fork. Fore femur subequal to tibia. Genitalia as figured; dististyle enlarged basally and distal 1/2 slender; aedeagus snowshoe-shaped; paramere

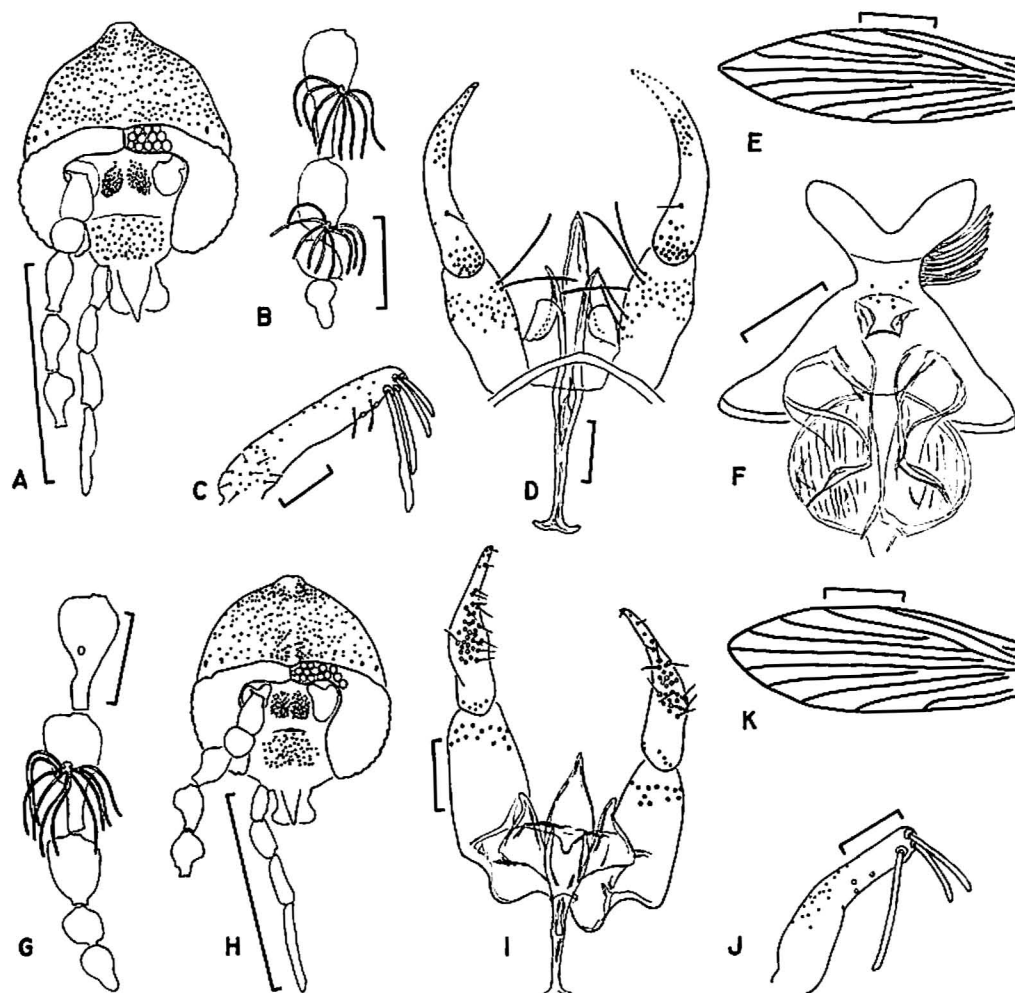


Fig. 41. a-f, *Telmatoscopus (Rhadinoscopus) paniscus*: a, ♂ head; b, ♂ antenna tip; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♂ wing; f, ♀ genitalia. g-k, *Telmatoscopus (Rhadinoscopus) hemedopos*, ♂: g, antenna tip; h, head; i, genitalia, dorsal; j, surstyle; k, wing. Scale lines of heads & wings = 0.3 mm; others = 0.05 mm.

forming pair of blunt points on either side of aedeagus; surstyle parallel-sided over distal part, bearing 3 tenacula.

Antenna = 0.94 mm, wing length = 1.25–1.50 mm, width = 0.40–0.45 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7265): NE New Guinea, Wau, 1200 m, 13–21.XII.1961, Malaise trap, J. Sedlacek.

87. *Telmatoscopus (Rhadinoscopus) gerrulus* Quate and Quate, new species Fig. 42a–d.

♂. Occiput elevated and rounded, vertex with hairs denser on anteromedian area than on remaining surface, 4× width of eye bridge; ratio of palpal segments = 5:7:7:15. Antenna with nodes

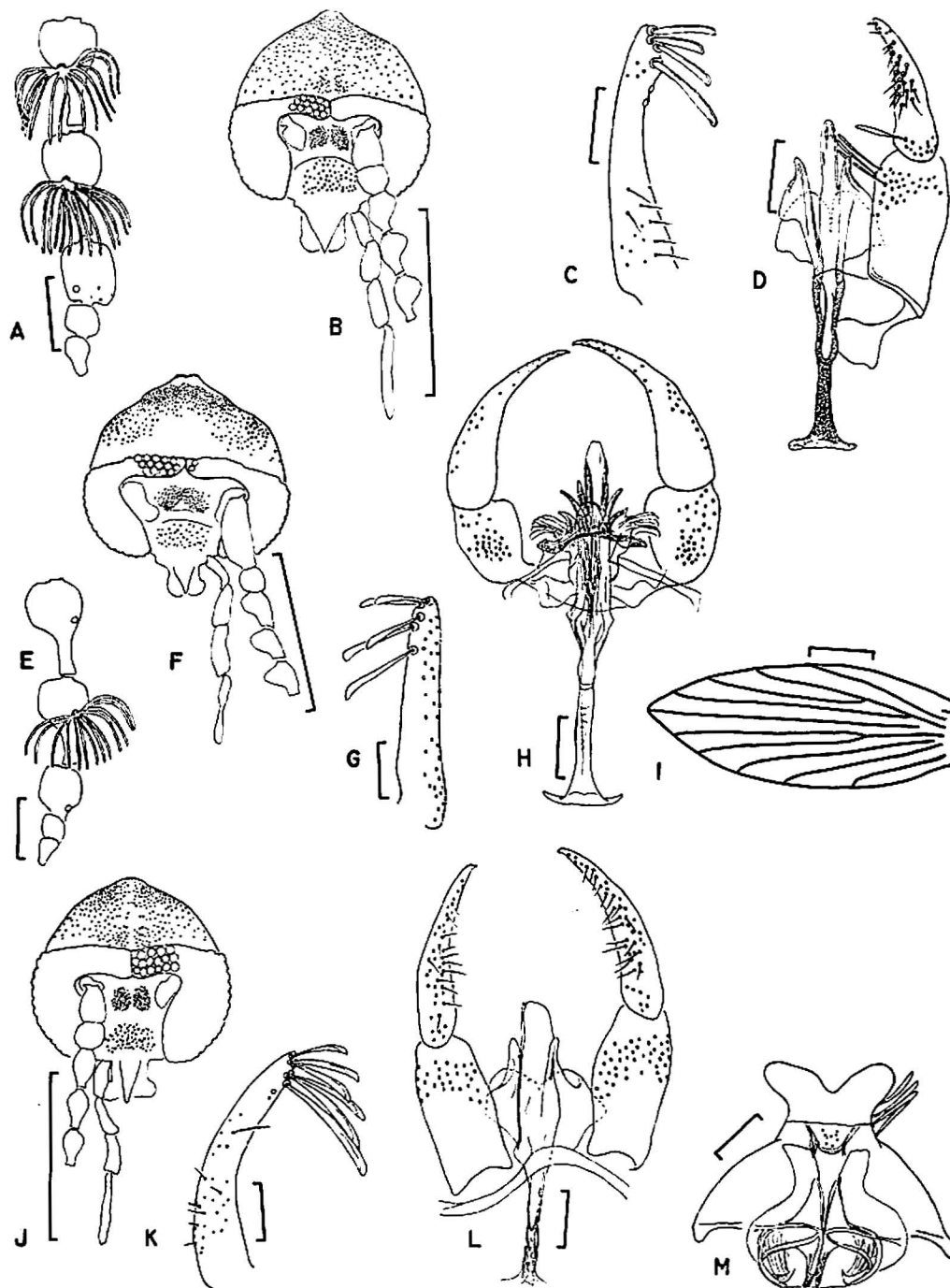


Fig. 42. a-d, *Telmatoscopus (Rhadinoscopus) gerrulus*, ♂: a, antenna tip; b, head; c, surstyle; d, genitalia, dorsal. e-i, *Telmatoscopus (Rhadinoscopus) aristosus*, ♂: e, antenna tip; f, head; g, surstyle; h, genitalia, dorsal; i, wing. j-m, *Telmatoscopus (Rhadinoscopus) paniscoides*: j, ♂ head; k, ♂ surstyle; l, ♂ genitalia, dorsal; m, ♀ genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

of flagellum eccentric. Wing with forks spurred, radial and medial forks on about same level; Cu ending at or little beyond medial fork. Fore femur subequal to tibia. Genitalia as figured; dististyle evenly tapering to apex; aedeagus slender and nearly parallel-sided with outspread base; paramere consisting of pair of rounded points at sides of aedeagus and additional pair of rounded lobes under aedeagus; surstyle parallel-sided over most of distal part, bearing 4 tenacula.

Antenna=1.00 mm, wing length=1.40 mm, width=0.42 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7266): NE New Guinea, Wau, 1200 m, 17-21.XII.1961, Malaise trap, J. Sedlacek.

88. **Telmatoscopus (Rhadinoscopus) aristosus** Quate and Quate, new species Fig. 42e-i.

♂. Occiput protuberant and indented on midline, vertex with hairs lacking on anteromedian area, $4\times$ width of eye bridge; facets lacking on inner margin of eye bridge and hence gap between facets; hair patch on frons not indented on posterior midline; ratio of palpal segments=6:7:9:13. Antenna with nodes of flagellum large and strongly eccentric, terminal 2 segments smaller than usual. Wing with forks unspurred, forks on same level; Cu ending beyond medial fork. Fore femur little longer than tibia. Genitalia as illustrated; dististyle slender over distal half and acutely pointed; aedeagus slender; paramere with 3 pairs of sharp, sclerotized points; surstyle parallel-sided over most of length, bearing 5 tenacula, basal tenacula separated from others.

Antenna=1.00 mm, wing length=1.62 mm, width=0.57 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7267): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

89. **Telmatoscopus (Rhadnoscopus) paniscoides** Quate and Quate, new species Fig. 42j-m.

♂. Vertex evenly rounded on sides and occiput not protuberant, hairs on anteromedian area denser than on rest of surface, $2.5-3\times$ width of eye bridge; ratio of palpal segments=6:7:8(7):13. Antenna with node of 1st segment of flagellum pyriform, following nodes eccentric. Wing with forks spurred, on same level; Cu ending little before or at level of medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle tapering to apex; paramere consisting of pair of slender, blunt points and pair of rounded lobes; surstyle parallel-sided over most of length, bearing 6 tenacula.

Antenna=0.90-0.99 mm, wing length=1.40-1.47 mm, width=0.44-0.47 mm.

♀. Similar to ♂. Antennal nodes smaller than in ♂. Genitalia as illustrated; apical lobe of subgenital plate V-shaped.

Antenna=0.60-0.61 mm, wing length=1.45-1.52 mm, width=0.42-0.47 mm.

Holotype ♂, allotype ♀ (BISHOP 7268): Papua, Murua, 5-25 m, 17-22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (BISHOP, USNM, CSIRO): 7 ♂♂, 4 ♀♀, same data as types.

90. **Telmatoscopus (Rhadinoscopus) insignis** Quate and Quate, new species Fig. 43a-e.

♂. Occiput slightly elevated and rounded, vertex with hairs denser on anteromedian area than on rest of surface, $3\times$ width of eye bridge; ratio of palpal segments=5:7:7:13. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric. Wings with forks spurred, forks on same level; Cu ending at level of medial forks. Fore femur longer than tibia. Genitalia as illustrated; dististyle inflated near center and tapering to acute apex; paramere consisting of pair of slender, blunt points and pair of small, rounded lobes; surstyle tapering to rounded apex, bearing 4 tenacula.

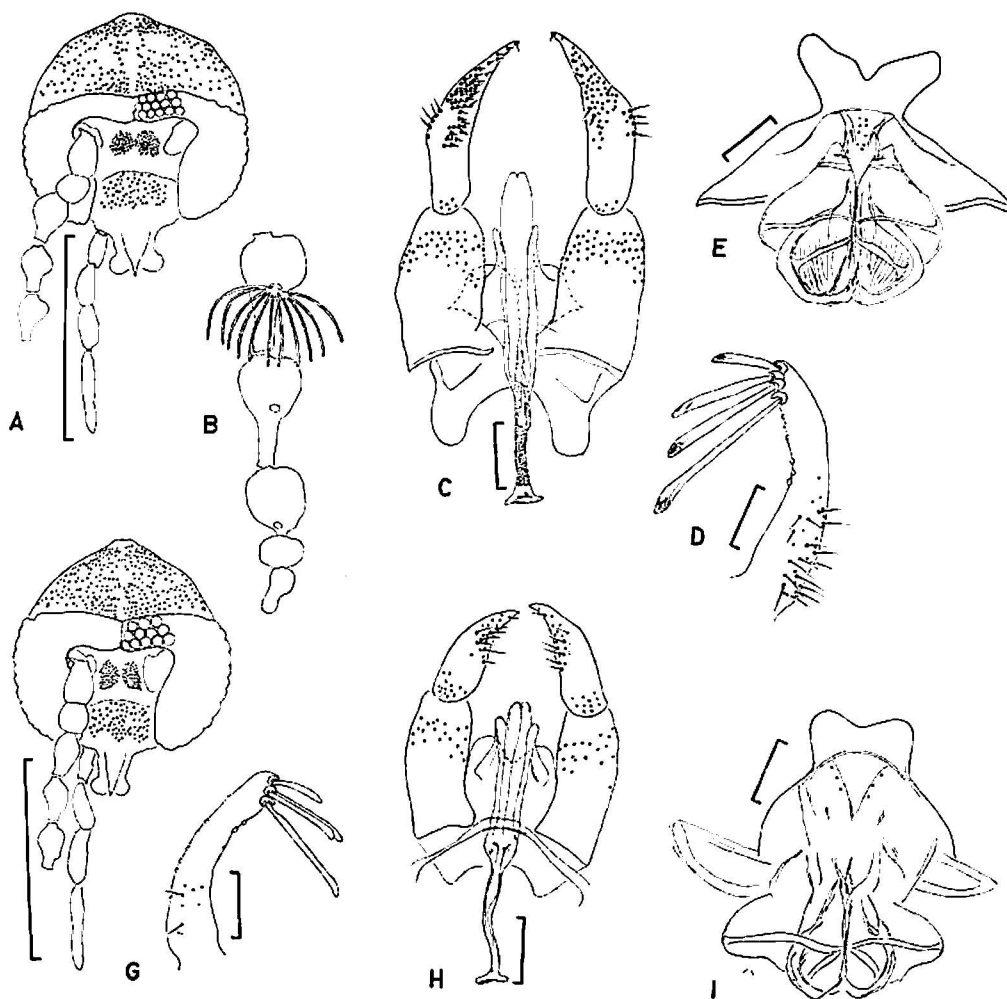


Fig. 43. a-c, *Telmatoscopus (Rhadinoscopus) insignis*: a, ♂ head; b, ♂ antenna tip; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♀ genitalia. f-i, *Telmatoscopus (Rhadinoscopus) ignavus*: f, ♂ head; g, ♂ surstyle; h, ♂ genitalia, dorsal; i, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

Antenna=0.95 mm (0.93-0.99), wing length=1.38 mm (1.30-1.47), width=0.41 mm, (0.35-0.42).

♀. Similar to ♂. Nodes of flagellum smaller than in ♂. Genitalia as figured; apical lobe of subgenital plate V-shaped.

Antenna=0.60-0.65 mm, wing length=1.49 mm (1.40-1.62), width=0.42 mm (0.40-0.47).

Holotype ♂, allotype ♀ (BISHOP 7269): NW New Guinea, Archbold L, 760 m, 26.XI-3. XII.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USMN, BMNH, CSIRO): 23 ♂♂, 15 ♀♀, same data as types.

91. ***Telmatoscopus (Rhadinoscopus) ignavus*** Quate and Quate, new species Fig. 43f-i.

♂. Vertex with sides rounded and occiput flattened, hairs evenly distributed over surface,

$2.5\times$ width of eye bridge; ratio of palpal segments=5:7:8:13. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric. Wing membrane pale, forks spurred, on same level, Cu ending at medial fork. Fore femur longer than tibia. Genitalia as illustrated; dististyle short and thick except at apex, shorter than basistyle; aedeagus extending little beyond paramere; paramere consisting of pair of slender, rounded points at side of aedeagus and pair of rounded lobes; surstyle parallel-sided over most of length, with 4 tenacula.

Antenna=0.90 mm, wing length=1.47 mm, width=0.45 mm.

♀. Similar to ♂. Flagellum with nodes smaller than in ♂. Genitalia as figured; subgenital plate with pair of indistinct bars on inner face, forming V-shaped area at base of apical lobe, 3 setae on posteromedian margin; longitudinally striated area posterior of spermatheca.

Antenna=0.56-0.62 mm, wing length=1.42-1.55 mm, width=0.45-0.47 mm.

Holotype ♂, allotype ♀ (BISHOP 7270): NW New Guinea, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 6 ♀♀, same data as types.

92. **Telmatoscopus (Rhadinoscopus) tubanus** Quate and Quate, new species Fig. 44a-f.

♂. Vertex with sides rounded, occiput elevated and truncate, hairs evenly distributed over surface, $2-2.5\times$ width of eye bridge; ratio of palpal segments=6:7:9:13. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric. Wing membrane without pattern; forks spurred, on same level; Cu ending before medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to acute apex and curved about distal 1/3; aedeagus expanded distally; paramere consisting only of 2 small lobes; surstyle slightly enlarged near apex, bearing 4 tenacula.

Wing length=1.47-1.70 mm, width=0.52-0.62 mm.

♀. Similar to ♂. Vertex $2.5-3\times$ width of eye bridge; antenna with nodes smaller than in ♂, only terminal segment reduced. Genitalia as figured; subgenital plate with U-shaped, sclerotized bar at base of apical lobe, group of about 6 setae enclosed within space; apical lobe short, much wider than long; spermatheca striate over most of surface.

Antenna=0.70-0.78 mm, wing length=1.57-1.77 mm, width=0.52-0.60 mm.

Holotype ♂, allotype ♀ (BISHOP 7271): NW New Guinea, Archbold Lake, 760 m, 26.XI-3.XII.1961, Malaise trap and light trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 2 ♂♂, 8 ♀♀, same data as types.

93. **Telmatoscopus (Rhadinoscopus) fratuelis** Quate and Quate, new species Fig. 44g-i.

♂. Vertex with sides rounded, vertex projecting and truncate, hairs evenly distributed over surface, $2.5\times$ width of eye bridge; ratio of palpal segments=5:6:8:13. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric. Wing membrane unpatterned; forks spurred, radial a little distad of medial; Cu ending on level of medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle evenly tapering to acute apex; aedeagus slender and parallel-sided; paramere consisting of pair of long slender points and pair of short, rounded lobes; surstyle parallel-sided over most of length, with 4 tenacula.

Antenna=0.92 mm, wing length=1.42 mm, width=0.45 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7272): NW New Guinea, Hollandia, VII-XII.1961, at light, R.T. Simon Thomas.

94. **Telmatoscopus (Rhadinoscopus) egregius** Quate and Quate, new species Fig. 44j-m.

♂. Vertex with sides rounded, occiput conical-truncate, hairs evenly distributed over surface, $4\times$ width of eye bridge; ratio of palpal segments=6:8:9:14. Antenna with node of 1st flagellar segment pyriform, following nodes eccentric, distal internodes longer than usual. Wing membrane



Fig. 44. a-f, *Telmatoscopus (Rhadinoscopus) tubanus*: a, ♀ antenna tip; b, ♂ head; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♂ wing; f, ♀ genitalia. g-i, *Telmatoscopus (Rhadinoscopus) fratuelis*, ♂: g, head; h, surstyle; i, genitalia, dorsal. j-m, *Telmatoscopus (Rhadinoscopus) agregius*, ♂: j, head; k, antenna tip; l, surstyle; m, genitalia, dorsal. Scale line of heads & wing=0.3 mm; others=0.05 mm.

unpatterned; forks spurred, on same level; Cu ending little beyond medial fork. Fore femur shorter than tibia. Genitalia as figured; dististyle nearly parallel-sided to distal 1/3 and thence tapering to curved, acute apex; aedeagus slender and parallel-sided; paramere consisting of 2 pairs of rounded lobes; surstyle nearly parallel-sided over entire length, bearing 4 tenacula.

Antenna=1.11 mm, wing length=1.55-1.70, width=0.45-0.52 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7273): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, Malaise trap, L. & S. Quate.

Subgenus **Oreoscopus** Quate and Quate, new subgenus

Large species, wing very broad with rounded apex and forks near base.

Eye bridges separated. Antenna with number of simple ascoids encircling about 2/3 of node; internodes usually short; terminal segments not reduced. ♂ without sense organs on head.

Wing very broad and rounded, R_4 ending in or before apex, R_5 beyond apex; R_{2+3} originating within 1st basal cell; radial fork not distad of medial, forks near base; Cu ending well beyond level of forks. Patagia often present. ♂ surstyle short and broad with many tenacula.

Type-species. *Telmatoscopus (Oreoscopus) wauensis* Quate and Quate, n.sp., by present designation.

Range. New Guinea.

KEY TO NEW GUINEA SPECIES OF OREOSOPUS

1. Palpus 2 shorter than 3 2
 Palpus 2 longer than or equal to 3 3
- 2(1). C strongly curved at base to give anterobasal part of wing a greatly enlarged section
 on anterior margin, beyond curvature C straight to tip of R_2 ; fore femur shorter than
 tibia101. **ambalatus**
 C without curve at base, straight to radial fork and then curving gently to apex; fore femur
 longer than tibia100. **spurius**
- 3(1). Radial and medial forks on same level 4
 Radial fork a little basad of medial 5
- 4(3). Eyes separated by 1 facet diameter; palps 2 and 3 subequal in length; wing apex between
 R_4 and R_5 98. **globalaris**
 Eyes separated by 2 facet diameters; palpus 2 longer than 3; R_4 ending in wing apex.....
 99. **kratkensis**
- 5(3). Fore femur longer than tibia 6
 Fore femur shorter than tibia95. **wauensis**
- 6(5). C with strongest curvature near level of radial fork and hence basal costal margin of wing
 enlarged.....96. **adustus**
 C evenly and slightly curved from base to wing apex, wing not enlarged at base97. **zygops**

95. **Telmatoscopus (Oreoscopus) wauensis** Quate and Quate, new species

Fig. 45a-f.

♂. Eyes separated by 3 facet diameters, eye bridge with 4 rows of facets, interocular suture arched and weakened in center; vertex 2.5-3× width of eye bridge, occiput extended into conical projection and flattened at apex; frons with rectangular patch of hair, median band wide, consisting of 4 irregular rows, oblique suture from antennal fossa to inner eye margin interrupted; palpus 2 little longer than 3, ratio=10:20:19:25. Antenna with scape little more than 2× pedicel; flagellar segments with internodes shorter than nodes, nodes symmetrical. Thorax without patagia. Wing membrane infuscated with clear spot near base of R_4 ; radial fork little basad of medial; costal area not enlarged; Sc and Cu free at apices. Fore femur shorter than tibia. Genitalia as

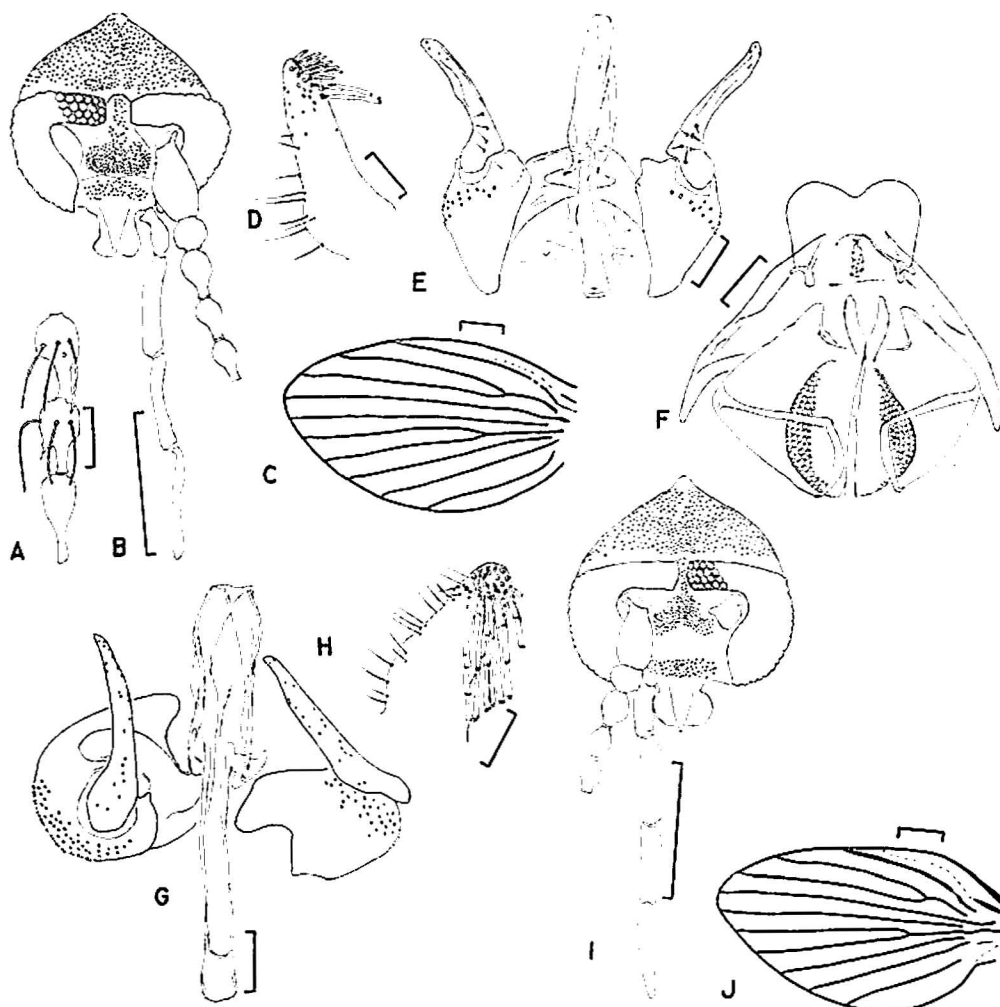


Fig. 45. a-f, *Telmatoscopus (Oreoscopus) wauensis*: a, ♂ antenna tip; b, ♂ head; c, ♂ wing; d, ♂ surstyle; e, ♂ genitalia, dorsal; f, ♀ genitalia. g-j, *Telmatoscopus (Oreoscopus) adustus*, ♂: g, genitalia, dorsal; h, surstyle; i, head; j, wing. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

illustrated; dististyle simple, straight; aedeagus terminating in elongate rectangular structure slightly tapering at apex; surstyle straight and rather short, with about 15 tenacula.

Antenna=1.32-1.46 mm, wing length=2.15-2.40 mm, width=1.07-1.20 mm.

♀. Similar to ♂. Antennal ascoids pair of simple rods. Genitalia as illustrated; apical lobe with weak apical concavity and nearly parallel sides, elongate teardrop-shaped structure on inner face at base of apical lobe.

Antenna=1.15-1.20 mm, wing length=2.25-2.50 mm, width=1.07-1.27 mm.

Holotype ♂, allotype ♀ (BISHOP 7274): NE New Guinea, Wau, 1450 m, 20.XII.1961, wet rocks in swift stream, S. Quate. Paratypes (USNM, BMNH, CSIRO): 7 ♂♂, 5 ♀♀, same data as types; 1 ♀, E slope of Mt Wilhelm, 2770 m, 8-10.IX.1959, 6th Archb. Exped.

96. **Telmatoscopus (Oreoscopus) adustus** Quate and Quate, new species Fig. 45g-j.
Wing very darkly infusate, costal margin slightly enlarged.

♂. Eyes separated by about 1.5 facet diameters, eye bridge with 4 rows of facets, interocular suture arched; vertex $2.5\times$ width of eye bridge, occiput extending into prominent conical projection which is flattened at apex; frons with triangular patch of hair, median band not reaching suture, oblique suture from antennal fossa extending to inner margin of eye bridge; palpus 2 little longer than 3, ratio=12:19:18:21. Antenna with scape little more than $2\times$ pedicel; flagellum with internodes shorter than nodes, basal internodes obsolescent, nodes generally symmetrical. Prothorax with pair of large patagia attached in front of anterior spiracle, patagium cylindrical with tapering base, apex flattened and pitted, interstices covered with microtrichiae. Wing with membrane infusate, darker in costal cell, with clear spot near base of R_1 ; costal area enlarged at base and C angulate at about level of radial fork; Sc ending free; Cu attached to M_4 by small, nebulous vein. Fore femur longer than tibia. Genitalia as figured; dististyle nearly straight, tapering; aedeagus terminating in box-like structure, a little inflated at apex; surstyle short, enlarged at base, with about 25 tenacula.

Antenna=1.20 mm, wing length=2.22 mm, width=1.12 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7275): Papua, Murua, 5-25 m, 10.XII.1964, Malaise trap, W.A. Steffan.

The dark wing membrane, slightly enlarged costal area, and prominent patagia, in combination with the genitalic structures, will distinguish *adustus* from other New Guinea *Oreoscopus*.

97. **Telmatoscopus (Oreoscopus) zygops** Quate and Quate, new species Fig. 46a-d.

♂. Eyes separated by 2 facet diameters, eye bridge with 4 rows of facets, interocular suture broadly, inverted V-shaped and thickened in center; vertex $2.5\times$ width of eye bridge; frons with rectangular patch of hair, median band an irregular triple row which is thickened at apex; palpus 2 longer than 3, ratio=9:20:16:22. Antenna with scape nearly $3\times$ pedicel; flagellum with internodes shorter than nodes, basal internodes obsolescent, nodes symmetrical. Thorax without patagia. Wing membrane infusate; costal area not enlarged; radial fork a little basad of medial; R_2 weakened at fork; clear area near base of R_1 extending along forward margin of vein to level of radial fork; Sc ending free; Cu enlarged subapically and extending to M_4 in tenuous extension. Fore femur longer than tibia. Genitalia as figured; dististyle straight and tapering; basistyle with pair of angulate lobes on inner face; surstyle short and broad, with about 15 tenacula, which are feathered at tips.

Wing length=2.17 mm, width=1.12 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7276): NW New Guinea, Guega, W of Swart Val., 1200 m, 15.XI.1958, J.L. Gressitt.

98. **Telmatoscopus (Oreoscopus) globalaris** Quate and Quate, new species Fig. 46e-i.

♂. Eyes separated by about 1 facet diameter, eye bridge with 4 rows of facets, interocular suture inverted U-shaped and interrupted in center; vertex $2.5\times$ width of eye bridge, occiput with small, conical protuberance; frons with rectangular patch of hair, median band an irregular triple row diminishing posteriorly and extending above upper eye margin, faint oblique suture from antennal fossa to lower eye margin laterad of inner angle; palps 2 and 3 subequal in length, ratio=12:19:19:24. Antenna with scape $3\times$ pedicel; flagellum with internodes shorter than nodes, basal internodes obsolescent, nodes symmetrical. Thorax with binodal patagia attached to propleuron in front of spiracle, apical, rounded surface of patagium covered with pits. Wing broad, costal area

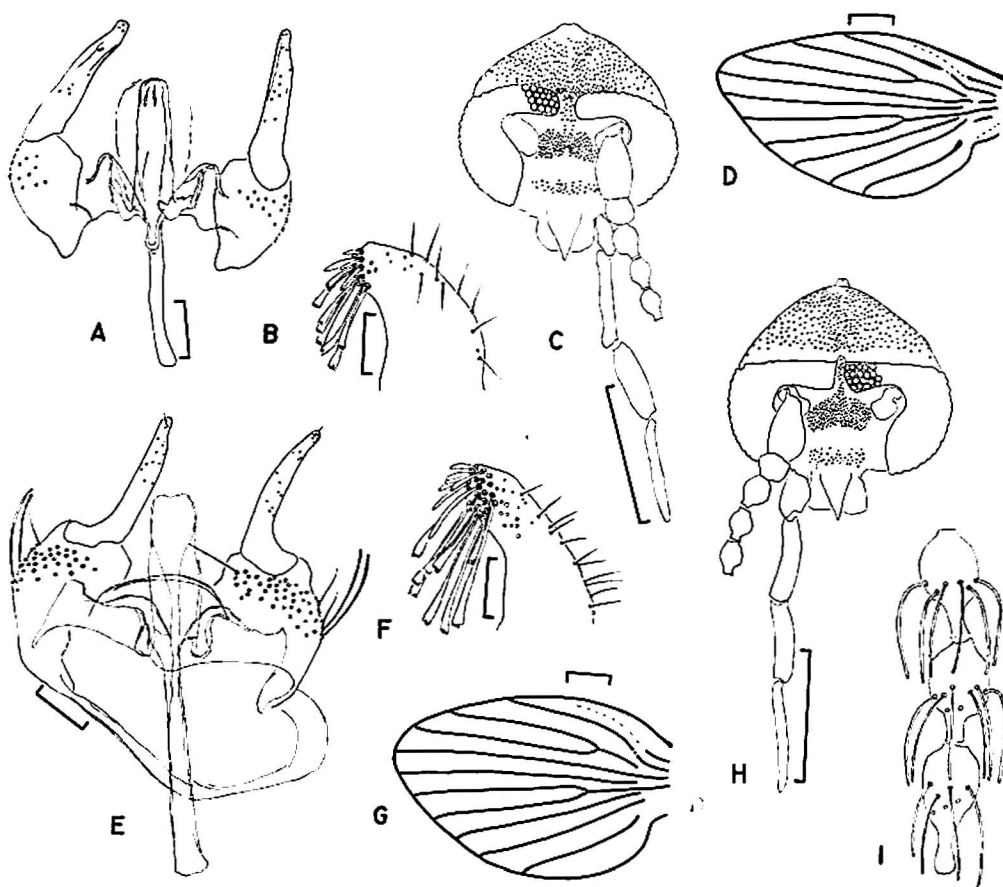


Fig. 46. a-d, *Telmatoscopus (Oreoscopus) zygops*, ♂: a, genitalia, dorsal; b, surstyle; c, head; d, wing. e-i, *Telmatoscopus (Oreoscopus) globularis*, ♂: e, genitalia, dorsal; f, surstyle; g, wing; h, head; i, antenna tip. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

not enlarged, membrane infuscated; radial and medial forks on same level; R_1 with pale spot near base; Sc ending free; Cu weakly joined to M_4 , not enlarged near apex. Genitalia as figured; dististyle a little curved, tapering; basistyle with rounded lobe on inner face; surstyle with about 20 tenacula, which are feathered at tips.

Antenna=1.22 mm, wing length=2.20 mm, width=1.27 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7277): Papua, Murua, 5-25 m, 17-22.XII.1964, Malaise trap, W.A. Steffan.

99. ***Telmatoscopus (Oreoscopus) kratkensis*** Quate and Quate, new species Fig. 47a-d. Integument and wing membrane pale.

♂. Eyes separated by 2 facet diameters, eye bridge with 4 rows of facets, interocular suture inverted U-shaped and weakened in center; vertex 3× width of eye bridge, occiput rounded with truncate conical projection at apex; frons with rectangular patch of hair, median band an irregular double row extending to upper eye margin, oblique suture from near antennal fossa to eye margin

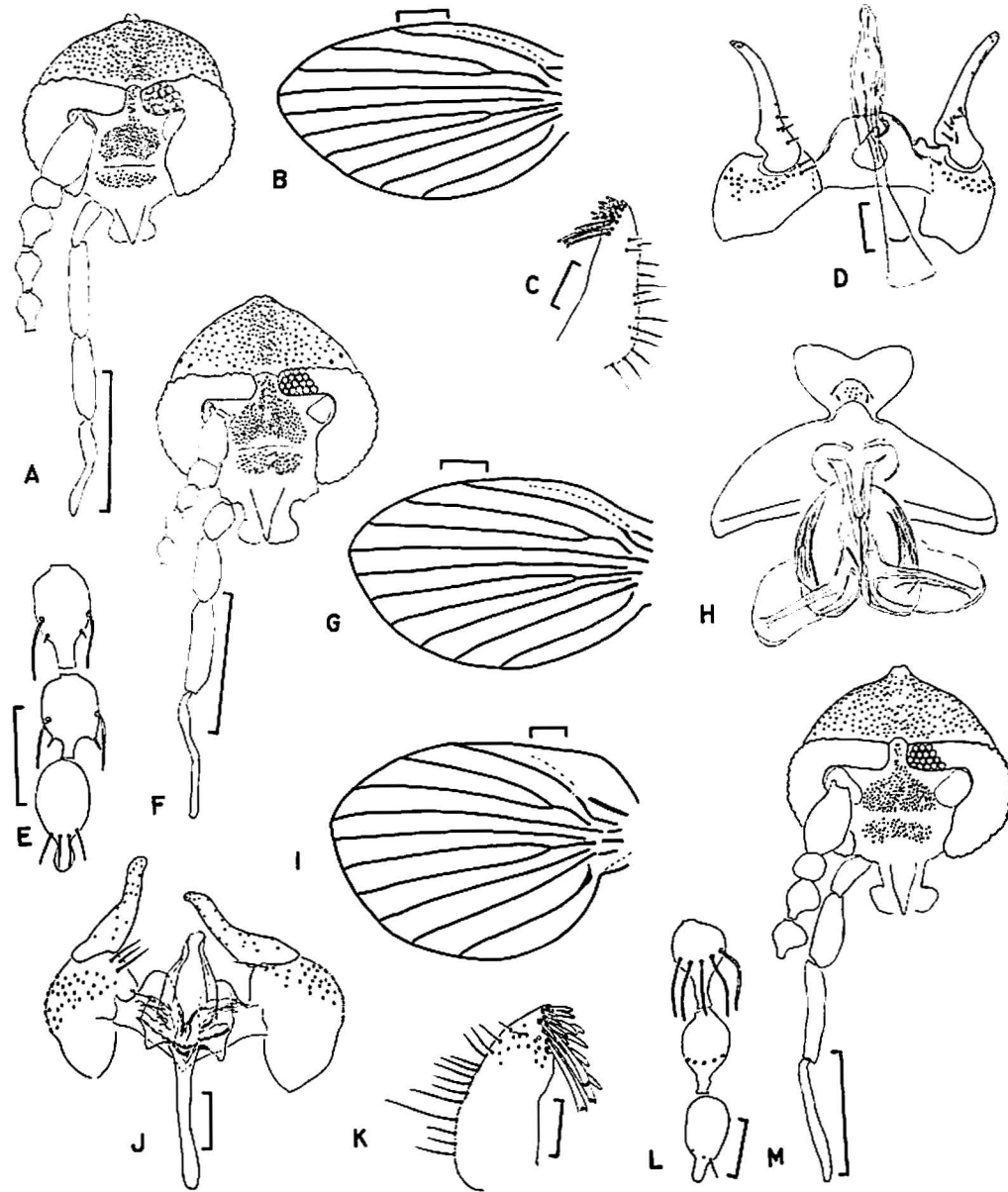


Fig. 47. a-d, *Telmatoscopus (Oreoscopus) kratkensis*, ♂: a, head; b, wing; c, surstyle; d, genitalia, dorsal. e-h, *Telmatoscopus (Oreoscopus) spurius*, ♀: e, antenna tip; f, head; g, wing; h, genitalia, i-m, *Telmatoscopus (Oreoscopus) ambalatus*, ♂: i, wing; j, genitalia, dorsal; k, surstyle; l, antenna tip; m, head. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

laterad of inner angle; palp 2 longer than 3, ratio=10.20:17:22. Antenna with scape $3\times$ pedicel; flagellum with basal internodes shorter than nodes and distal internodes longer than nodes, nodes symmetrical. Thorax without patagia. Wing membrane not infuscated; costal area not enlarged; radial and medial forks on same level. Sc and Cu ending free. Genitalia as figured; dististyle with broad base, a little curved, tapering; aedeagus with inverted lampglass-shaped apical part; surstyle straight and evenly tapering, with about 20 tenacula, only basal ones feathered.

Antenna=1.32 mm, wing length=2.05 mm, width=1.07 mm.

♀. Unknown.

Holotype ♂ (AMNH): NE New Guinea, Kratke Mts, Lae-Goroka Rd., 1370 m, 30.X.1959, 6th Archbold Exped.

One female was collected at the same place as the above male. It resembles the male in the pale coloration and other nonsexual characters, except that the radial fork is a little basad of the medial. The female genitalia, however, appears indistinguishable from that of *wauensis* and probably belongs to that species. However, because of its association with the single male of *kratzensis*, we hesitate to assign the female to either of the species until more is known of their distribution and variation.

100. **Telmatoscopus (Oreoscopus) spuriosus** Quate and Quate, new species Fig. 47e-h.

♀. Eyes widely separated by 3-4 facet diameters, eye bridges with 4 rows of facets, interocular suture slightly bowed and with triangular projection in center; vertex $3\times$ width of eye bridge, semicircular in outline with broad, weakly bilobed protuberance on occiput; frons with trapezoidal patch of hair, median band wide and not extending to suture; palpus 2 shorter than 3, ratio=9:13:19:26. Antenna with scape $2.5\times$ pedicel; flagellum with internodes shorter than nodes, nodes symmetrical; ascoids a pair of simple rods on each segment. Wing membrane infuscated; costal area not enlarged; radial fork basad of medial; clear spot near base of R_1 ; Sc and Cu weakly joined to R_1 and M_4 respectively. Fore femur little longer than tibia. Genitalia as figured; apical lobe somewhat heart-shaped with small apical concavity.

Antenna=0.93-1.02 mm, wing length=2.25-2.42 mm, width=1.07-1.25 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7278): NE New Guinea, Bulolo Gorge, near Bulolo, 900 m, 19.XII.1961, vegetation at streamside, S. Quate. Paratypes (BISHOP): 1 ♀, same data.

101. **Telmatoscopus (Oreoscopus) ambalatus** Quate and Quate, new species Fig. 47i-m.

Wing very large with angulate, enlarged costal area.

♂. Eyes separated by 2.5 facet diameters, eye bridge with 4 rows of facets, interocular suture arched; vertex $2.5\times$ width of eye bridge, occiput with truncate conical projection; frons with trapezoidal patch of hair, median band an irregular triple row extending to upper eye margin; palpus 2 shorter than 3, ratio=12:17:24:29. Antenna with scape $2.5\times$ pedicel; flagellum with internodes shorter than nodes, nodes eccentric. Thorax with a pair of large, mushroom-shaped patagia, surface covered with many, stalked spheroids which appear covered with microtrichiae. Wing very broad, membrane infuscate; costal area enlarged and C strongly curved at level of Sc and then nearly straight to apex of R_1 ; forks on same level; R_1 with clear area near base; Sc ending free; Cu weakly joined to M_4 . Fore femur shorter than tibia. Genitalia as figured; dististyle a little sinuate; aedeagus furcate and ending in pair of acutely pointed tips; surstyle short, with about 20 tenacula, basal ones feathered.

Antenna=1.47 mm, wing length=2.75 mm, width=1.87 mm.

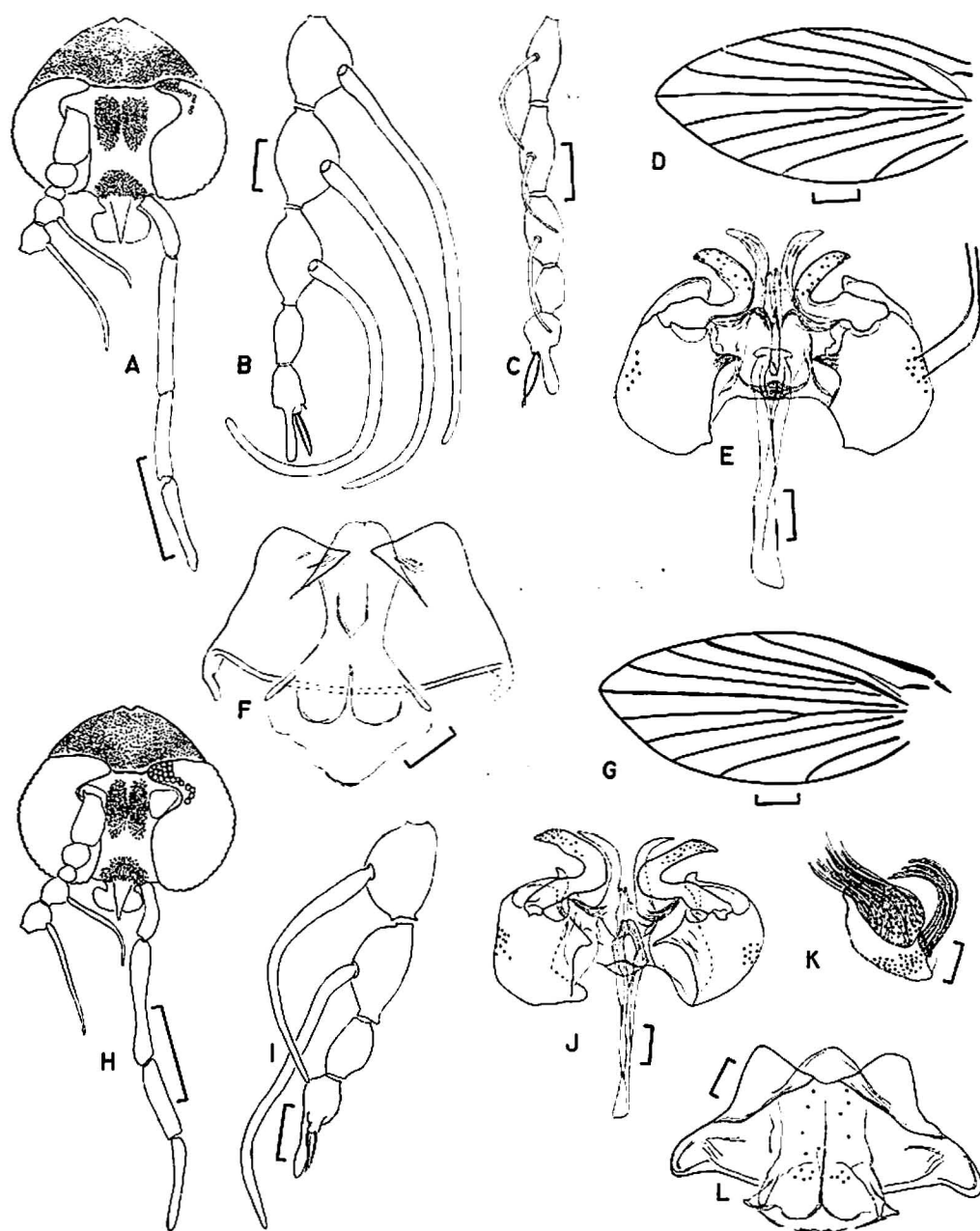


Fig. 48. a-f, *Gerobrunettia geminata*: a, ♂ head; b, ♂ antenna tip; c, ♀ antenna tip; d, ♂ wing; e, ♂ genitalia, dorsal; f, ♀ genitalia. g-l, *Gerobrunettia sibilensis*: g, ♂ wing; h, ♂ head; i, ♂ antenna tip; j, ♂ genitalia, dorsal; k, ♂ surstyle; l, ♀ genitalia. Scale lines of heads & wings = 0.3 mm; others = 0.05 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7279): NE New Guinea, Wau, 1200 m, 14-17.XII.1961, Malaise trap, J. Sedlacek.

Although the above two species, *spurius* and *ambalatus*, are known from opposite sexes and come from the same general area in NE New Guinea, it is not believed that they belong to the same species. The wing of *ambalatus* is an unusual and distinctive one with the greatly enlarged costal area and presumably the female of the species also has an enlarged wing, although not to the same degree as in the male. The female of *spurius* shows no enlargements in the costal area and therefore is not considered to be the same as *ambalatus*. These two species differ noticeably from other New Guinea *Oreoscopus* in having the 2nd palpal segment clearly shorter than the 3rd.

Genus *Gerobrunettia* Quate and Quate, new genus

Eyes widely separated. Antenna 16-segmented, nodiform, terminal segments reduced. Male thorax with patagium. Wing not unusually broad, length about 1.4× width, membrane covered with hairs but not scales; Rs pectinate; R₅ ending in acute apex; radial fork near base of R₄. Male genitalia with dististyle strongly curved, aedeagus furcate, and surstyle short and broad, with 2 clusters of tenacula, most tenacula with bell-shaped tips; ♀ genitalia with V-shaped or concave apical border and without rounded lobes.

Type-species; *Gerobrunettia geminata* Quate and Quate, n.sp., by present designation.

This genus may be recognized by its general similarity to *Brunettia*, but with wings normally shaped, which are more slender than usually found in male *Brunettia*, the widely separated eyes and the 16-segmented antenna. In the New Guinea species, the first flagellar segment is strongly reduced and this too appears to be a generic character. The male and female genitalia are similar in the New Guinea species and presumably characteristic of the genus.

Relationships to *Brunettia* are seen in the wing venation and haired wing membrane, the shape of the head and eye configuration, the antennal structure and simple (though greatly enlarged in the male) ascoids; and the bell-tipped tenacula of the male genitalia.

The 16-segmented antenna and wing shape more characteristic of other psychodids than *Brunettia* might indicate that *Gerobrunettia* is antecedent to the bulk of present *Brunettia* species. However, the only known species are only found in the subcontinent of New Guinea and are so closely related to each other that they suggest recent speciation. This, of course, does not support an old age of *Gerobrunettia* and other evidence for age of the group will have to come from finding species in other areas.

The name is formed by prefixing *geras* (Gr., old age) to *Brunettia*. The gender is feminine.

KEY TO NEW GUINEA SPECIES OF GEROBRUNETTIA

1. Cu ending beyond level of medial fork; eyes widely separated by 11-14 facet diameters..... 2
Cu ending at level of medial fork; eyes separated by 7-8 facet diameters; ♂ basistyle with sharply pointed, curved spur on dorsoapical margin.....103. **sibilensis**
2. Median margin of ♂ basistyle without spur 3
Median margin of ♂ basistyle with short, dark spur at distal 1/3; ♀ genitalia as in fig. 48f.....
.....102. **geminata**
3. ♂ dististyle ends as simple, rounded point; aedeagus preapically curved dorsad and then recurved laterad; ♀ genitalia as in fig. 49e104. **kagora**
♂ dististyle ends in darkly sclerotized, acute apex and similar, preapical projection; aedeagus ending in single curve on one plane; ♀ unknown.....105. **filamentosa**

102. *Gerobrunettia geminata* Quate and Quate, new species Fig. 48a-f.

♂. Eyes widely separated by 12-13 facet diameters, interocular suture straight and thick, eye bridge very short; occiput with notch in apex; frons largely covered with hair except on posterior area, patch with indentation on midline; palpus with segment 1 relatively long, ratio=17:38:24:27. Antenna 16-segmented; scape 2× pedicel; 1st flagellar segment very small, remaining segments eccentric with short or obsolescent internodes, terminal 2 segments reduced; ascoids a pair of very long, simple rods. Thorax with mushroom-shaped patagium, about 2× size of spiracle. Wing length about 1.4× width; radial fork well basad of medial; apex of Cu little beyond medial fork; membrane infusate. Fore femur little longer than tibia. Genitalia as figured; basistyle with short, dark spur on median margin; dististyle very strongly curved into C-shaped structure; aedeagus with distal points curved away from each other; surstyle short and broad, nearly globular with numerous hairlike tenacula on distal surface and dense cluster preapically, all tenacula with clavate or bell-shaped tips.

Antenna=1.35 mm (1.27-1.42), wing length=2.37 mm (2.25-2.47), width=0.99 mm (0.95-1.05).

♀. Similar to ♂. Eyes separated by 14 facet diameters; nodes of antenna and ascoids smaller than in ♂. Thorax without patagium. Genitalia as illustrated; subgenital plate concave apically without usual rounded lobes, dome-like protuberance on midline.

Antenna=1.71-1.25 mm, wing length=2.71 mm (2.50-2.82), width=1.06 mm (0.97-1.12).

Holotype ♂, allotype ♀ (BISHOP 7280): NW New Guinea, Bokondini, 5-11.XI.1961, on vegetation, S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 13 ♂♂, 9 ♀♀, same data as types and 16-23.XI.1961.

103. *Gerobrunettia sibilensis* Quate and Quate, new species Fig. 48g-l.

♂. Eyes widely separated by 7-8 facet diameters, interocular sutures straight except a little curved near eye margin, occiput with rounded notch at apex; eye bridge short; frons with 2 contiguous patches of hair that are separated anteriorly and posteriorly and cover most of surface; palpus with segment 1 relatively long and segment 3 longest of all segments, ratio=19:37:23:28. Antenna 16-segmented; scape 2× pedicel; 1st flagellar segment very small, following nodes eccentric, internodes obsolescent or very short, terminal 2 segments reduced; ascoids a pair of long, simple rods. Thorax with mushroom-shaped patagium posterior to anterior spiracle, patagium about 2× size of spiracle. Wing membrane in fuscate but lighter in center; radial fork well basad of medial; Cu on same level as medial fork. Fore femur little longer or equal to tibia. Genitalia as illustrated; basistyle with curved spur on dorsoapical margin; dististyle strongly curved, C-shaped; points of aedeagus strongly curved away from each other distally; surstyle short and broad, with large apical protuberance bearing numerous tenacula and smaller preapical protuberance also bearing numerous tenacula, all tenacula clavate or with bell-shaped tips.

Antenna=1.50-1.55 mm, wing length=2.45-2.67 mm, width=1.02-1.07 mm.

♀. Similar to ♂. Eyes separated by 11 facet diameters; nodes of flagellum and ascoids smaller than in ♂. Thorax without patagium. Genitalia as figured; apex of subgenital plate broadly V-shaped, rounded protuberance on midline, similar to *geminata*.

Wing length=2.25-2.95 mm, width=1.00-1.17 mm.

Holotype ♂, allotype ♀ (BISHOP 7281): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap and at light, L. & S. Quate. Paratypes (BISHOP): 3 ♂♂, 3 ♀♀, same data as types.

This species is closely related to *geminata* and shares most of its characters with that species; however, the two species may be differentiated by genitalic characters, particularly the position of the spine on the basistyle and the structure of the female genitalia.

104. *Gerobrunettia kagora* Quate and Quate, new species

Fig. 49a-e.

♂. Eyes widely separated by 14 facet diameters, interocular suture nearly straight, eye bridge short, marked indentation in facet pattern laterad of antennal fossa; occiput with rounded notch at apex; frons with 2 patches of hairs which are narrowly separated on midline except near center; palpus with segment 1 about $1/3 \times$ length of other segments; 2 largest segment, ratio = 13:33:23:27. Antenna 16-segmented; scape $2 \times$ pedicel, 1st flagellar segment very small, following nodes eccentric and with obsolescent or very short internodes, terminal 2 segments reduced; ascoids a pair of long, simple rods. Thorax with mushroom-shaped patagium about $2 \times$ size of spiracle. Wing membrane infusate but lighter in center; radial fork well basad of medial; Cu ending beyond medial fork. Genitalia as figured; basistyle not bearing spur; dististyle curved at about right angle in center, ending in simple, rounded apex; aedeagus curved dorsad and sharply recurved laterad, apex

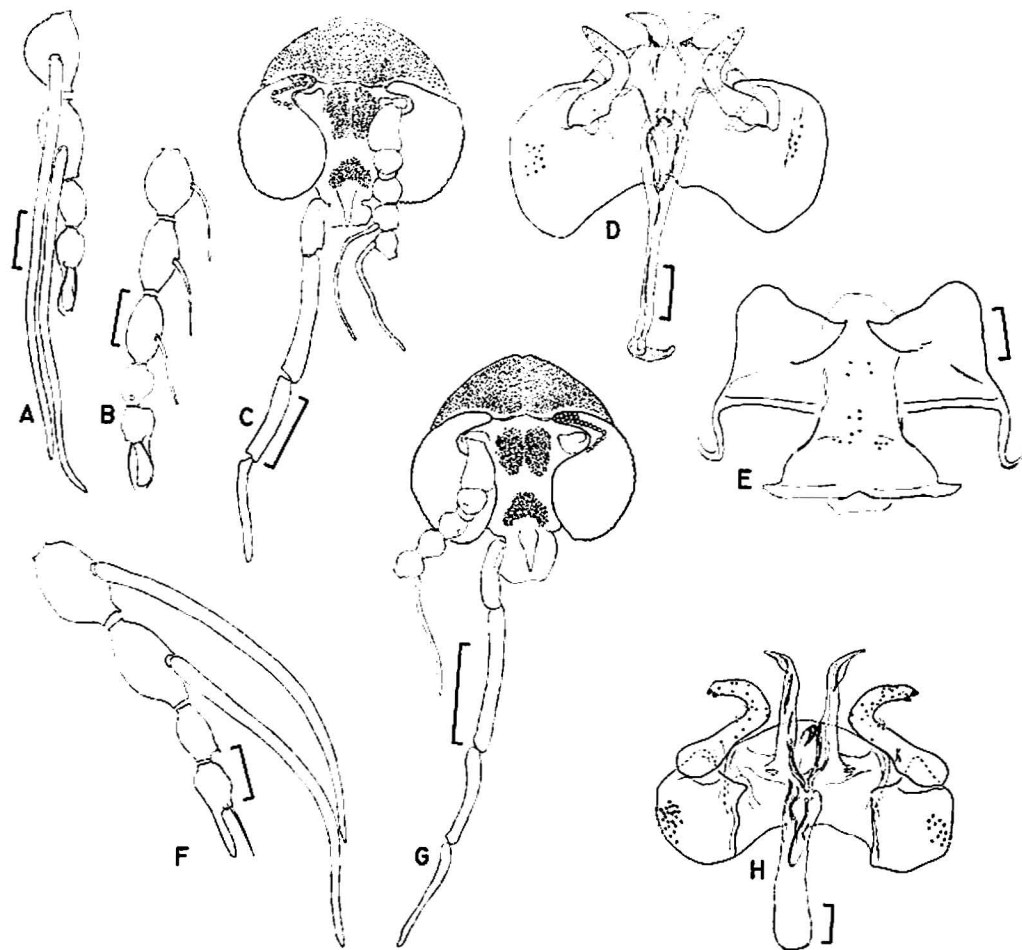


Fig. 49. a-e, *Gerobrunettia kagora*: a, ♂ antenna tip; b, ♀ antenna tip; c, ♂ head; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-h, *Gerobrunettia filamentosa*, ♂: f, antenna tip; g, head; h, genitalia, dorsal. Scale lines of head = 0.3 mm; others = 0.05 mm

pale and not heavily sclerotized; surstyle short and broad, apex rounded and bearing numerous tenacula, dense cluster of tenacula preapically, all tenacula either clavate or with bell-shaped tips.

Antenna=1.12 mm, wing length=2.25 mm, width=0.92 mm.

♀. Similar to ♂. Eyes separated by 13 facet diameters; nodes of flagellum and ascoids smaller than in ♂. Thorax without patagium. Subgenital plate concave apically, with rounded protuberance on midline.

Antenna=1.07 mm, wing length=2.57 mm, width=1.00 mm.

Holotype ♂, allotype ♀ (BISHOP 7282): NE New Guinea, Karimui, 1000 m, 2-3.VI.1961, Malaise trap, J.L. & M. Gressitt.

105. *Gerobrunettia filamentosa* Quate and Quate, new species Fig. 49f-h.

♂. Eyes separated by 12 facet diameters, interocular suture slightly curved in center, eye bridge short, facet pattern with marked indentation laterad of antennal fossa; occiput with notch at apex; frons with 2 patches of hairs which are narrowly separated on midline except near center; palpus 1 about $1/2 \times 2$, 2 longest segment, ratio=20:42:27:33. Antenna 16-segmented; pedicel about $2.5 \times$ scape; 1st flagellar segment very small, nodes of following segment eccentric, internodes obsolescent or very short, terminal 2 segments reduced; ascoids a pair of long, simple rods. Thorax with mushroom-shaped patagium arising near anterior spiracle, about $3 \times$ size of spiracle. Wing membrane infusate in costal and subcostal cells; radial fork well basad of medial; Cu ending little beyond medial fork. Genitalia as illustrated; basistyle without spur; dististyle J-shaped, apex darkly sclerotized, with apical and preapical points; aedeagus straight over most of length and then curved near apex, apical part pale, not heavily sclerotized; surstyle short and broad, apex with numerous tenacula, dense cluster of tenacula preapically, all tenacula either clavate or with bell-shaped tips.

Antenna=1.40 mm, wing length=2.65 mm, width=1.15 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7283): NW New Guinea, Enarotali, Wissel Lakes, 1800 m, 2.VIII.1955, light trap, J.L. Gressitt.

Genus *Brunettia* Annandale 1910

Type-species. *Diplonema superstes* Annandale, by subseq. select., Brunetti 1911.

Range. Cosmopolitan.

A number of features distinguish this genus: The slender eye bridges which are several times narrower than height of eye bridge, the long palpi, the broad haired wing with the forks close to the base and pectinate radial sector, the peculiar, capitate tenaculæ of the short ♂ surstyle, and the characteristic ♀ genitalia which is fairly uniform throughout the genus.

A number of unusual species have evolved in the endemic New Guinea fauna. Here is to be found the largest psychodid known and several with peculiar modifications without precedent elsewhere. Nonetheless, these modified species, as outstanding as they are, retain the basic characteristics of *Brunettia* and are placed in the genus without difficulty.

KEY TO NEW GUINEA SPECIES OF BRUNETTIA

- | | | |
|--------|---|----|
| 1. | Radial fork clearly basad of medial fork | 2 |
| | Radial fork on same level as or slightly basad of medial fork | 14 |
| 2 (1). | Cu ending far beyond medial fork..... | 3 |
| | Cu ending at or near level of medial fork | 12 |
| 3 (2). | Cu lacking or represented only by short section at base..... | 4 |

- Cu present and hence 3 veins after medial fork 5
- 4 (3). ♂ eyes contiguous, thorax with globular patagium; R_2 with strong curvature beyond fork; ♀ unknown106. **onerata**
 ♂ eyes separated by about 1 facet diameter, thorax without patagium; R_2 nearly straight beyond fork; ♀ unknown107. **anfracta**
- 5 (3). Cu in normal position, distance between Cu and M_1 same as between other veins; fore femur longer than tibia; ♂ wing not wider than long 6
 Cu far removed from M_1 , distance between these veins greater than between other veins; fore femur shorter than tibia; ♂ wing very broad, wider than long; large species, wing length 4.4–5.0 mm108. **goliath**
- 6 (5). R_1 with distinct, preapical curve 7
 Distal part of R_1 straight 8
- 7 (6). ♂ eyes contiguous, ♀ eyes separated by 3–4 facet diameters; ♂ surstyle without appendage at base109. **cyclops**
 ♂ eyes separated by 1–1.5 facet diameters, ♀ unknown; ♂ surstyle with digitiform appendage at base on ventral surface110. **grossipenna**
- 8 (6). Basal section of R_1 absent or obsolescent between tip of Sc and radial fork (except *pumilis* ♂ which has narrow wings and no sclerotized spot at base of R_1) 9
 Basal section of R_1 present, but obscured by dark, sclerotized area; ♂ wing broad, length about 1.3 × width; ♂ eyes contiguous; ♀ unknown111. **jeffiensis**
- 9 (8). Radial fork separated from base of R_1 by distance greater than between R_1 and R_2 10
 Radial fork very close to base of R_1 , distance less than between R_1 and R_2 ; ♂ dististyle straight, tips of aedeagus small and ending much before tip of paramere...112. **sedlaceae**
- 10(9). ♂ eyes contiguous, ♀ eyes separated by 2–4 facet diameters and interocular suture with spur on midline11
 ♂ eyes separated by 3 facet diameters, ♀ eyes by 4–5 and interocular suture a simple, straight line; a small, pale species113. **pumilis**
- 11(10). Wing membrane darkly infuscate with clear areas at base on fold; tips of ♂ aedeagus small and ending much before tip of paramere; lobes of ♀ subgenital plate quadrate.....114. **phainops**
 Wing membrane lightly infuscate; tips of ♂ aedeagus extending nearly to tip of aedeagus; ♀ unknown115. **iota**
- 12 (2). R_2 and R_3 straight beyond fork13
 R_2 and R_3 unusually curved and recurved beyond fork, R_3 obscure in center; ♂ dististyle C-shaped and strongly capitate116. **sinuosa**
- 13(12). Large species, wing length 2.8 mm or more; ♂ dististyle broad and rounded apically.....117. **remostyla**
 Small species, wing length less than 1.5 mm; ♂ dististyle slender118. **exigua**
- 14 (1). Ascoids simple, unbranched rods15
 Ascoids palmate, multibranched16
- 15(14). ♂ with R_1 strongly curving close to R_2 between radial fork and R_1 base; ♂ dististyle thick and ending in small, beak-like apex; ♀ with basal section of R_1 lacking, genitalia as in fig. 56 m119. **chydaea**
 ♂ with R_1 with slight curvature near base; ♂ dististyle slender throughout; ♀ unknown.....120. **orbicularis**
- 16(14). Antenna with scape 1.5–2 × pedicel17
 Antenna with scape elongate, in ♂ 4 × pedicel and apicomedian angle enlarged, protuberant and bearing dense patch of spatulate hairs; ♂ aedeagus clavate; ♀ unknown.....121. **longiscapa**
- 17(16). ♂ dististyle broad and paddle-like; ♀ unknown122. **palmata**
 ♂ dististyle slender; ♀ unknown123. **tenuistyla**

106. *Brunettia onerata* Quate and Quate, new species

Fig. 50a-f.

♂. Eyes contiguous; vertex with sides straight over most of extent, occiput angulate, but not protuberant; frons with hairs only on anterior part and without median band; ratio of palpal segments=4:15:18:20. Antenna with scape 2× pedicel; flagellar segments of ordinary nodiform shape; ascoids single-branched. Thorax with large, circular patagium attached immediately behind anterior spiracle, diameter of patagium about equal to length of pedicel of antenna. Wing moderately broad; R_2 strongly curved beyond fork; radial fork well basad of medial; R_2 , R_5 , and M_4 unusually thick. Fore femur longer than tibia. Genitalia as figured; dististyle nearly straight after basal curvature and bluntly rounded at apex; aedeagus ending before apex of paramere; surstyle normal, with numerous, thread-like, capitate tenacula.

Antenna=0.84-0.89 mm, wing length=1.62-1.80, width=0.70-1.02 mm.

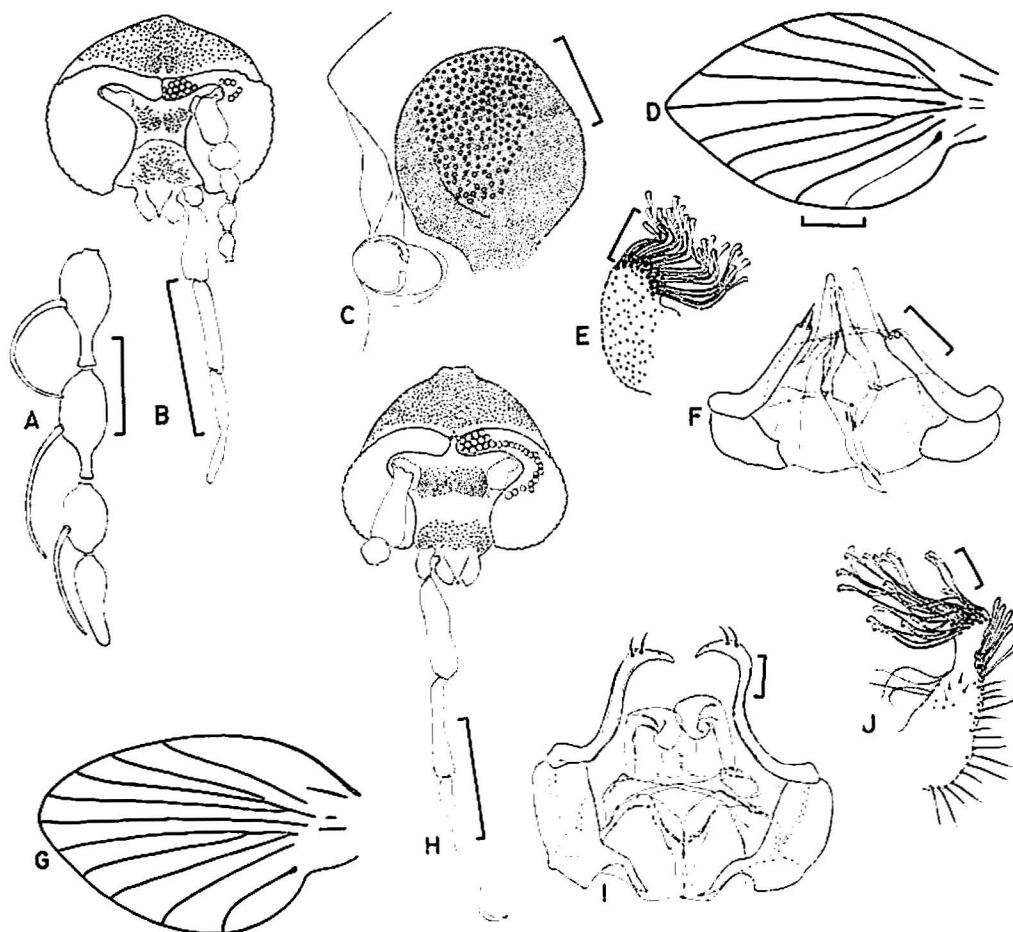


Fig. 50. a-f, *Brunettia onerata*, ♂: a, antenna tip; b, head; c, anterior spiracle & patagium; d, wing; e, surstyle; f, genitalia, dorsal. g-j, *Brunettia anfracta*, ♂: g, wing; h, head; i, genitalia, dorsal; j, surstyle. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7284): NE New Guinea, Baitabag, 1.XII.1964, W.A. Steffan. Paratypes (BISHOP, USNM, CSIRO): 5 ♂♂, same data as type.

107. ***Brunettia anfracta*** Quate and Quate, new species Fig. 50g-j.

♂. Eyes narrowly separated by 1 facet diameter, interocular suture thick with strong spur on midline; vertex with sides rounded, occiput a little protuberant and flattened with small indentation on midline; frons with hairs only on anterior 1/2; ratio of palpal segments=7:24:23:34. Antenna with scape nearly 3× pedicel; remainder of antenna broken. Thorax without patagium. Wing not unusually broad; radial fork basad of medial; Cu completely absent. Genitalia as figured; dististyle very slender, strongly curved basally and apically, ending in beak-like apex; apex of aedeagus slender and straight; parameres straight-sided and at apex enlarged and coiled; surstyle elongate, bearing numerous, thread-like tenacula with bell-tips, preapical cluster of short broad tenacula on ventral surface.

Wing length=2.15 mm, width=1.27 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7285): NW New Guinea, Hollandia, VII-XII.1961, at light, R.T. Simon Thomas.

108. ***Brunettia goliath*** Quate and Quate, new species Fig. 51a-e.

♂. Eyes separated by 6-7 facet diameters, eye bridge arched in center and with long, median spur which extends to apex of vertex; occiput a little elevated and deeply excavated on midline; frons covered with rectangular patch of hairs which ends well before interocular suture; palpus with segment 2 longer than 3 and little shorter than 4, ratio=15:57:48:58. Antenna with scape 2× pedicel; flagellum with segments T-shaped, nodes widely and narrowly extended on each side, terminal segment reduced and narrowly pyriform; ascoids arising from lateral angle of flagellar node, star-shaped with numerous branches. Thorax without patagium. Wing unusually large and broad, wider than long, angulate on anterior and posterior margins and at apex; radial fork very close to base of wing, basad of medial. Fore femur shorter than tibia. Genitalia as figured, of *biformis* type; dististyle slender and strongly curved near base; aedeagus short and ending before center of parameres; surstyle normal, with numerous, thread-like, bell-tipped tenacula.

Antenna=2.65-(3.10) mm, wing length=4.70 mm (4.42-5.00), width=4.90 mm (4.55-5.35).

♀. Unknown.

Holotype ♂ (BISHOP 7286): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 8 ♂♂, same data as type.

This remarkable species is the largest psychodid known. It is also the only species in which the wings are broader than long. Other related species of *Brunettia* have large, broad wings but none have them as extremely developed as *goliath*. The T-shaped flagellar nodes of the antenna are also extreme developments of a pattern found in other species.

109. ***Brunettia cyclops*** Quate and Quate, new species Fig. 51f-l.

♂. Eyes contiguous; occiput elevated into pair of rounded lobes; frons covered with trapezoidal patch of hairs which extends nearly to eyes on midline; palpus with segment 2 longer than 3 and 4, ratio=9:30:25:28. Antenna with scape nearly 3× pedicel; flagellum with nodes strongly eccentric, terminal segment reduced; ascoids palmate, with many branches. Thorax without patagium. Wing very broad; radial fork basad of medial. Fore femur longer than tibia. Genitalia as figured; dististyle slender and capitate; surstyle elongate and capitate, apical surface with numerous, thread-

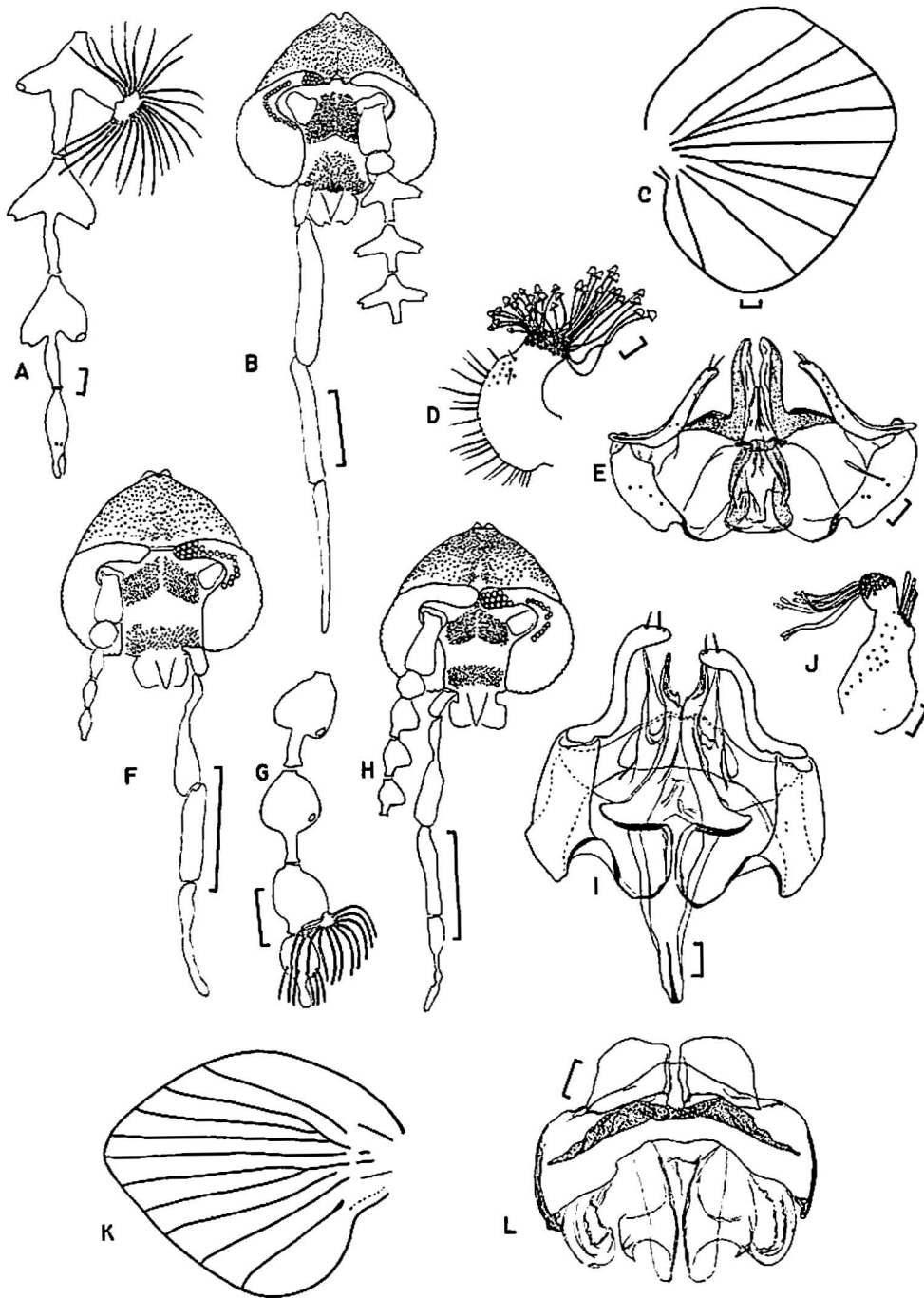



Fig. 51. a-e, *Brunettia goliath*, ♂: a, antenna tip; b, head; c, wing; d, surstyle; e, genitalia, dorsal. f-l, *Brunettia cyclops*: f, ♀ head; g, ♂ antenna tip; h, ♂ head; i, ♂ genitalia, dorsal; j, ♂ surstyle; k, ♂ wing; l, ♀ genitalia. Scale lines of heads & wings=0.3 mm; others=0.05 mm. 

like tenacula with bell-shaped tips, patch of shorter, thicker, capitate tenacula on ventral surface before apex.

Antenna=1.42-1.67 mm, wing length=2.73 mm (2.50-2.97), width=2.19 mm (2.10-2.40).

♀. Eyes separated by 3-4 facet diameters; antennal scape 2× pedicel, flagellar nodes smaller than in ♂ and symmetrical. Wing length 2.4× width. Genitalia as figured; subgenital plate consisting of pair of quadrate lobes.

Antenna=1.03-(1.10) mm, wing length=2.35-2.45 mm, width=1.00-1.07 mm.

Holotype ♂, allotype ♀ (BISHOP 7287): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI. 1961, Malaise trap and on vegetation, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 14 ♂♂, 2 ♀♀, same data as types.

110. ***Brunettia grossipenna*** Quate and Quate, new species Fig. 52a-e.

♂. Eyes separated by 1-1.5 facet diameters, interocular suture thick and straight; occiput elevated into pair of dome-like protuberances on midline; vertex with trapezoidal patch of hairs, posterior projections extend between eye bridges nearly to suture; palpus 2 and 4 subequal, ratio=6:25:20:25. Antenna with scape 2× pedicel; flagellum with first node pyriform and enlarged, remaining nodes globular, terminal segment reduced; ascoids palmate with many branches. Thorax without patagium. Wing large but not unusually broad; radial fork basad of medial. Fore femur longer than tibia. Genitalia as illustrated; dististyle short and curved at strong angle in center, terminating in 2 sharp points; apical part of aedeagus sinuous and slender; parameres slender and curved, extend well beyond tip of aedeagus; surstyle with long, digitiform appendage at base of ventral surface, apex a little upturned and bearing numerous, thread-like tenacula with bell-tips, preapical group of short thick tenacula on slight elevation on ventral surface.

Antenna=1.40-1.55 mm, wing length=2.19 mm (2.05-2.29), width=1.24 mm (1.17-1.30).

♀. Unknown.

Holotype ♂ (BISHOP 7288): NW New Guinea, Sibil Val, 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 15 ♂♂, same data as type.

111. ***Brunettia jefliensis*** Quate and Quate, new species Fig. 52f-i.

♂. Eyes broadly contiguous, eye bridge wide, thick spur on posterior midline; sides of vertex slightly angulate, small bilobed projection on occiput; hair patch on frons concave on posterior margin; ratio of palpal segments=4:20:26:28. Antenna with scape nearly 3× pedicel; nodes of flagellum eccentric, 1st node much larger than following; ascoids a pair of simple, coiled rods. Thorax without patagium. Wings broad, apex rounded; R_1 joined to R_{2+3} and R_2 at base by dark, sclerotized area; radial and medial forks on same level close to wing base. Fore femur much longer than tibia. Genitalia as figured; dististyle broad and tapering to acute apex, sword-like; parameres curved, extending little beyond tip of aedeagus; surstyle of *biformis* type.

Antenna=1.50 mm, wing length=2.67 mm, width=2.12 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7289): NW New Guinea, Jef Lio I., Vogelkop, 15.XII.1957, D.E. Hardy.

112. ***Brunettia sedlacekiae*** Quate and Quate, new species Fig. 53a-g.

♂. Eyes separated by 3-4 facet diameters, interocular suture nearly straight; vertex with evenly rounded sides and occiput without protuberance but slightly indented on midline; frons with narrow, rectangular patch of hairs which protrudes posteriorly on midline but most of posterior part of frons bare; ratio of palpal segments=5:19:22:26. Antenna with scape 2.5× pedicel; nodes of flagellum large and a little eccentric, internodes short, terminal segment reduced; ascoids a pair of simple,

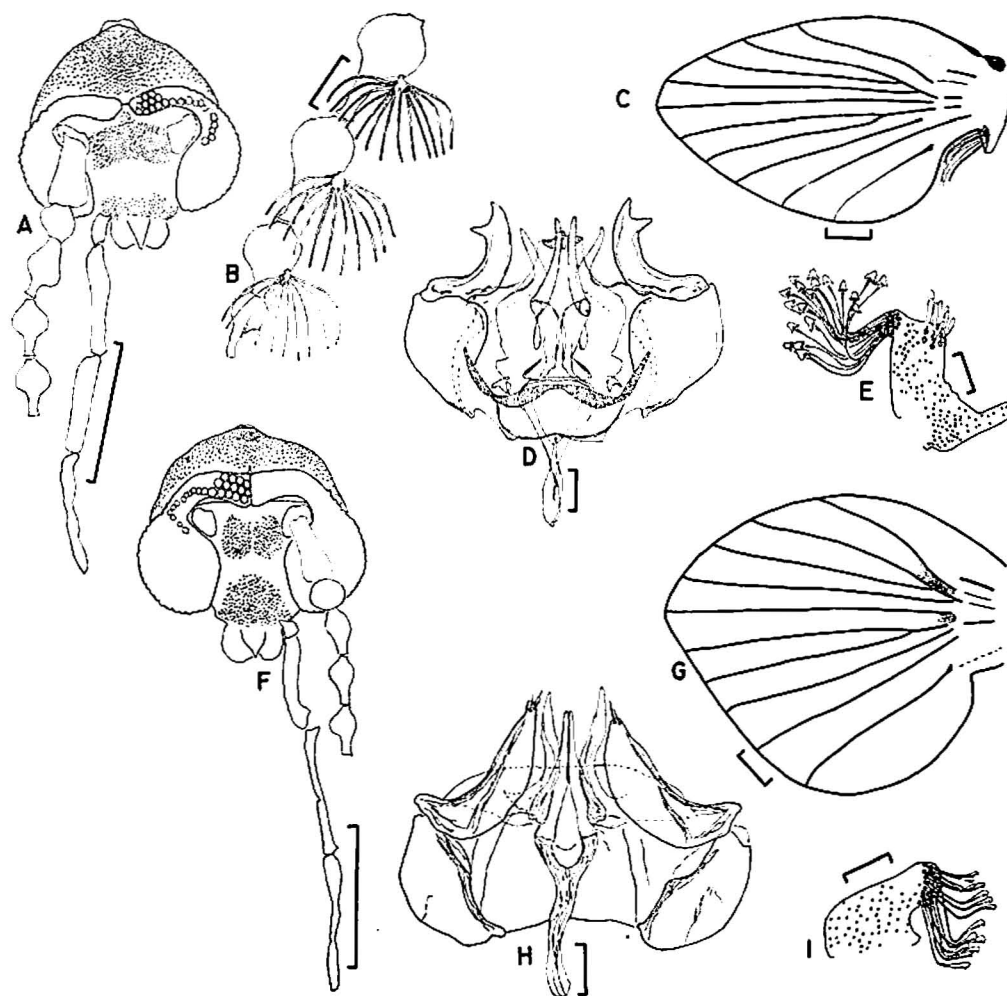


Fig. 52. a-e, *Brunettia grossipenna*, ♂: a, head; b, antenna tip; c, wing; d, genitalia, dorsal; e, surstyle. f-i, *Brunettia jeftiensis*, ♂: f, head; g, wing; h, genitalia, dorsal; i, surstyle. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

sinuous rods. Thorax with globular patagium attached by membranous stock posterior to anterior spiracle. Wing moderately broad with acute apex; radial fork well basad of medial and near origin of R_4 ; Cu ends well beyond medial fork. Genitalia as figured; dististyle straight with 2 strong, apical spines; apex of aedeagus small, parameres thick and extend far beyond tip of aedeagus; surstyle of usual *Brunettia* shape, some tenacula thread-like with comb-like tips and others short and spatulate.

Antenna=1.26 mm (1.10-1.35), wing length=2.04 mm (1.87-2.22), width=0.99 mm (0.87-1.07).

♀. Similar to ♂. Eyes separated by about 6 facet diameters; antenna smaller than in ♂; thorax without patagium. Genitalia as figured; subgenital plate with 2 well separated lobes, of *biformis* type.

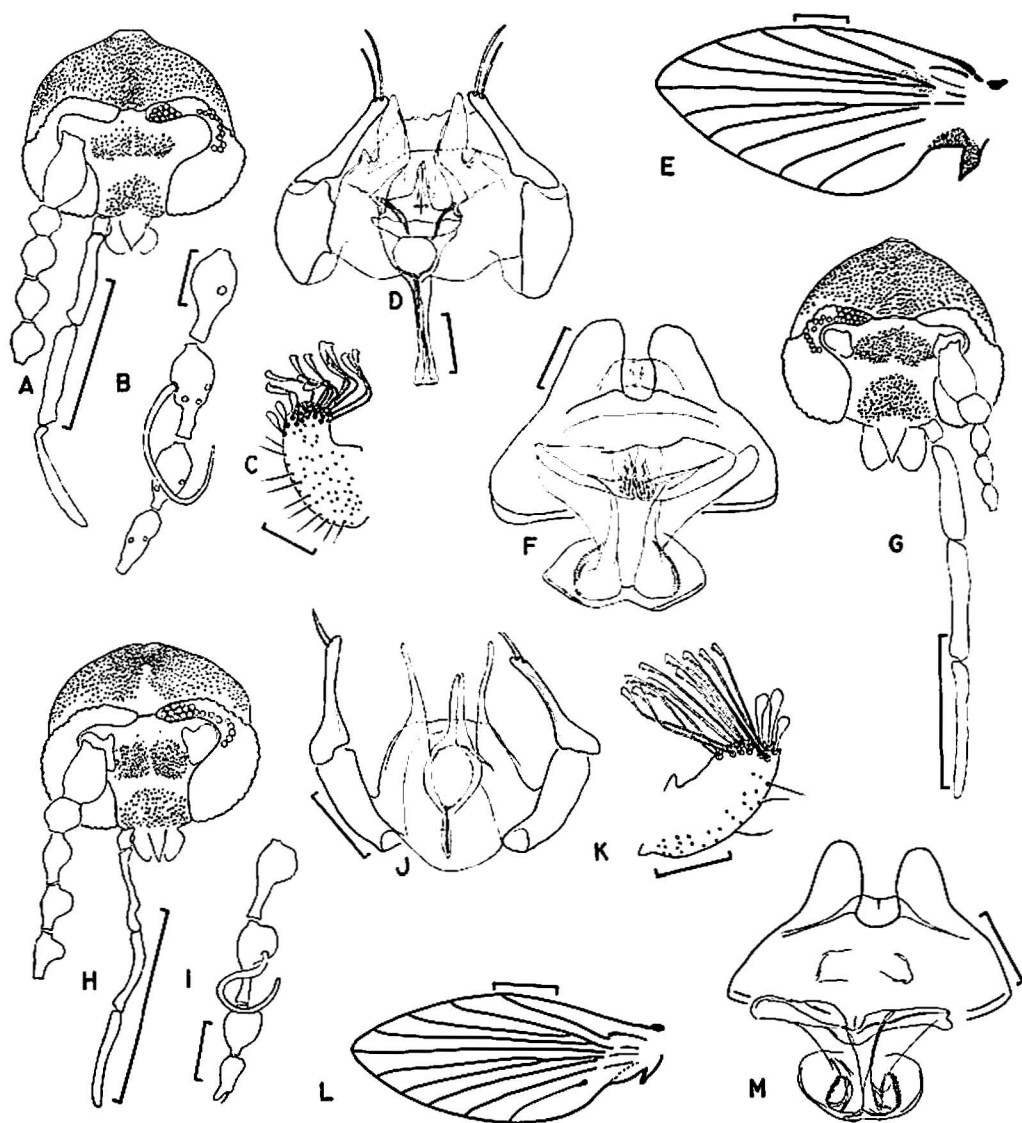


Fig. 53. a-g, *Brunettia sedlacekiae*: a, ♂ head; b, ♂ antenna tip; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♂ wing; f, ♀ genitalia; g, ♀ head. h-m, *Brunettia pumilis*: h, ♂ head; i, ♂ antenna tip; j, ♂ genitalia, dorsal; k, ♂ surstyle; l, ♂ wing; m, ♀ genitalia. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

Antenna=0.91 mm (0.87-1.00), wing length=2.02 mm (1.85-2.22), width=0.83 mm (0.72-0.90).

Holotype ♂, allotype ♀ (BISHOP 7290): NE New Guinea, Wau, 1200 m, 13-17.XII.1961, Malaise trap, J. Sedlacek. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 16 ♂♂, 27 ♀♀, same data as types; 19 ♂♂, 25 ♀♀, NW New Guinea, Sibil Val., 18.X-8.XI.1961, L. & S. Quate; 4 ♂♂, NW New Guinea, Archbold Lake, 26.XI-3.XII.1961, L. & S. Quate; 1 ♂, NW

New Guinea, Vogelkop, Kebar Val., 22-24.I.1962, L. & S. Quate.

It is with pleasure that we dedicate this species to Mrs Marie Sedlacek in recognition of her unselfish assistance to entomological work in New Guinea.

113. **Brunettia pumilis** Quate and Quate, new species Fig. 53 h-m.

Pale species with narrow wings.

♂. Eyes separated by 3 facet diameters, interocular suture straight; vertex with sides rounded and small concavity on occiput; frons with rectangular patch of hairs on anterior part and bare posteriorly; ratio of palpal segments=4:12:12:15. Antenna with scape 2× pedicel; 1st flagellar node pyriform and larger than following, following nodes eccentric, terminal segment reduced; ascoids a pair of large, simple coiled rods. Thorax with domelike patagium behind anterior spiracle. Wing pale, moderately narrow, with hairs on membrane but no scales; R_1 joined to R_{2+3} by darkened area; radial fork well basad of medial. Fore femur longer than tibia. Genitalia as illustrated; dististyle slender and nearly straight; parameres extending well beyond tip of aedeagus; surstyle of *biformis* type.

Antenna=0.95-1.02 mm, wing length=1.35-1.52 mm, width=0.57-0.62 mm.

♀. Similar to ♂. Eyes separated by 4-5 facet diameters; flagellum of antenna smaller than in ♂; thorax without patagium. Genitalia as figured, of *biformis* type.

Antenna=0.65-0.73 mm, wing length=1.42-1.52 mm, width=0.50-0.55 mm.

Holotype ♂, allotype ♀ (BISHOP 7291): NW New Guinea, Sibil Val., 18.X-8.XI.1961, Malaise trap and on vegetation, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 5 ♂♂, 4 ♀♀, same data as types.

114. **Brunettia phainops** Quate and Quate, new species Fig. 54a-h.

♂. Eyes contiguous but facets lacking near inner margin thus leaving gap on midline, thick, triangular spur on posterior junction of eyes; sides of vertex evenly rounded, very small, bilobed projection on occiput; hair patch on frons deeply indented on midline; ratio of palpal segments=4:14:15:18. Antenna with scape about 1.5× pedicel; nodes of flagellum a little eccentric, 1st node no longer than following, terminal segment reduced; ascoids a pair of simple, coiled rods. Thorax with large, dark, C-shaped patagium behind anterior spiracle. Wing not unusually broad, membrane darkly infuscate; radial fork basad of medial; Cu ends little beyond medial fork. Fore femur much longer than tibia. Genitalia as figured; dististyle small and strongly curved at base; aedeagus small; lobes of paramere extend well beyond tip of aedeagus; surstyle of usual *biformis* type, tenacula with comb-like tips.

Antenna=1.02-(1.15) mm, wing length=1.55 mm (1.47-1.67), width=0.74 mm (0.67-0.80).

♀. Similar to ♂. Eyes separated by 2-4 facet diameters; flagellum of antenna smaller than in ♂; thorax without patagium. Genitalia as figured, of *biformis* type; lobes of subgenital plate quadrate.

Antenna=0.67-(0.80) mm, wing length=1.56 mm (1.50-1.67), width=0.68 mm (0.62-0.72).

Holotype ♂, allotype ♀ (BISHOP 7292): Papua, Murua, 17-22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 4 ♂♂, same data as types; 6 ♂♂, 14 ♀♀, NW New Guinea, Geelvink Bay, Nabire, 2-9.VII.1962, light trap, J.L. Gressitt & J. Sedlacek; 2 ♂♂, NE New Guinea, Sepik Distr, Dreikikir, 400 m, 25.VI.1961, Malaise trap, J.L. & M. Gressitt.

115. **Brunettia iota** Quate and Quate, new species Fig. 54i-m.

♂. Eyes contiguous, with triangular spur on posterior midline; vertex with sides rounded and bilobed projection on occiput; hair patch on frons concave on posterior margin; ratio of palpal

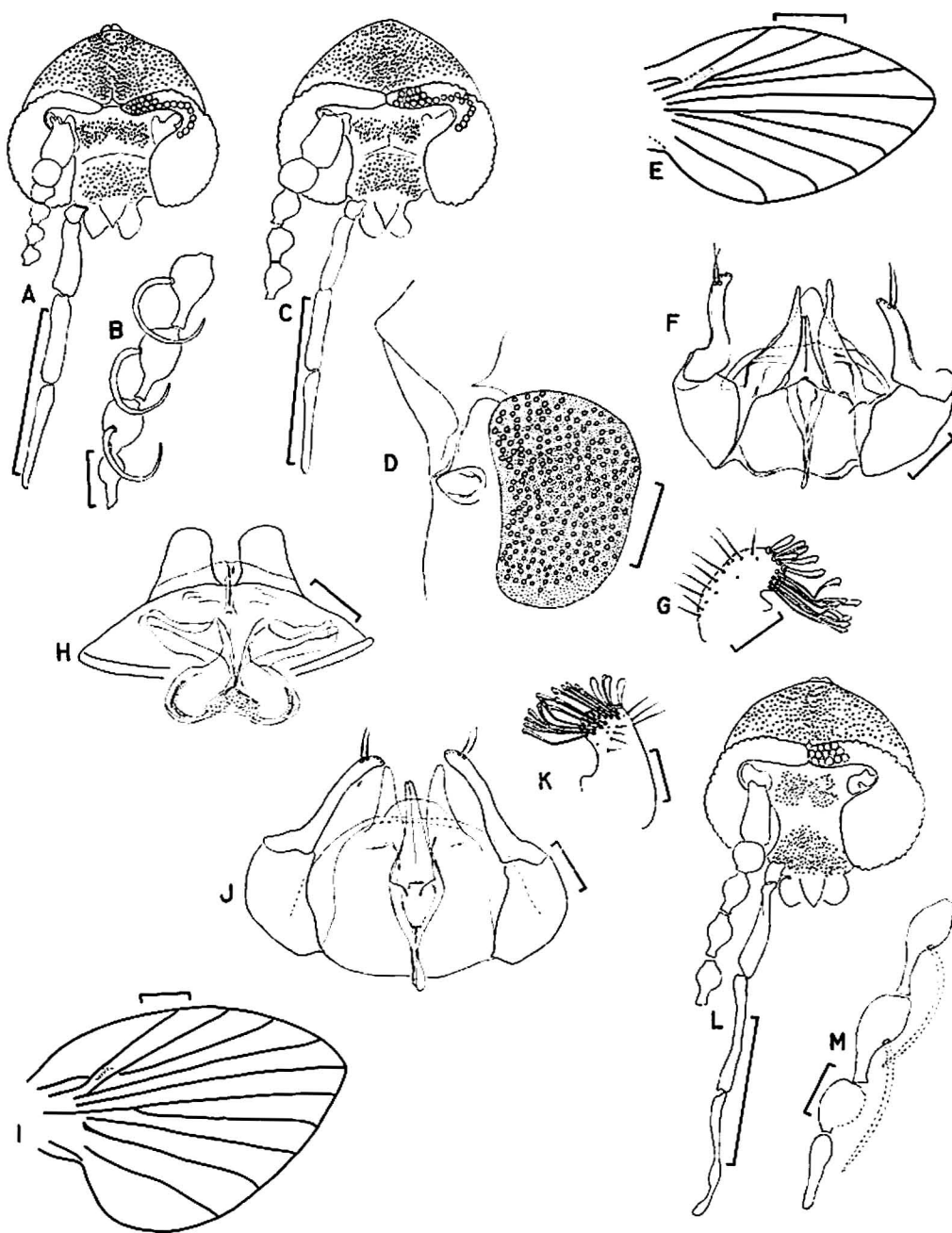


Fig. 54. a-h, *Brunettia phainops*: a, ♀ head; b, ♂ antenna tip; c, ♂ head; d, ♂ anterior spiracle & patagium; e, ♂ wing; f, ♂ genitalia, dorsal; g, ♂ surstyle; h, ♀ genitalia. i-m, *Brunettia iota*, ♂: i, wing; j, genitalia, dorsal; k, surstyle; l, head; m, antenna tip. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

segments=4:20:23:25. Antenna with scape $2 \times$ pedicel; nodes of flagellum apparently symmetrical, 1st node little longer than following, terminal segment reduced; ascoids a pair of simple, coiled rods. Thorax with large, dark, C-shaped patagium immediately behind anterior spiracle. Wing broad with acute apex; R_1 joined to R_{2+3} by darkened area; radial fork little basad of medial. Fore femur much longer than tibia. Genitalia as figured, of *biformis* type; parameres extend little beyond tip of aedeagus.

Antenna=1.32 mm, wing length=2.25 mm, width=1.37 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7293): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

116. *Brunettia sinuosa* Quate and Quate, new species Fig. 55a-d.

A large, pale species.

♂. Eyes separated by 5 facet diameters, interocular suture weak, straight, vertex with occiput a little elevated and slightly indented on midline; frons with pair of hair patches contiguous in center but separated anteriorly and posteriorly; palpus slender, ratio=8:28:25:35. Antenna with scape about $2 \times$ pedicel; flagellar nodes broadly cordate; apex of antenna and ascoids lacking but presumably ascoids palmate. Thorax without patagium. Wing not unusually broad and costal area not enlarged; apex rounded; veins R_2 , R_3 markedly curved and recurved after fork and R_3 lying close to R_4 ; radial fork basad of medial. Genitalia as illustrated; dististyle slender but strongly capitate; parameres extending well beyond tip of aedeagus; surstyle elongate, bearing numerous thread-like tenacula with bell-shaped tips.

Wing length=3.02 mm, width=1.52 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7294): NW New Guinea, Enarotali, Wissel Lakes, 1-10.VIII.1962, J. Sedlacek.

The unusual curvature of the radial veins makes this species readily identifiable. Also, the pale coloration and the strongly enlarged tips of the dististyle are unusual for *Brunettia*.

117. *Brunettia remostyla* Quate and Quate, new species Fig. 55f-i.

♂. Eyes widely separated by 8 facet diameters, interocular suture straight with small arch in center; occiput flattened, but with slight elevation in center which is concave on posterior margin; frons with dense, rectangular patch of hairs, posterior border with slight indentation on midline and anterior border with deep cleft on midline; palpus with segments 2 and 3 enlarged, ratio=8:32:30:36. Antenna with scape $2 \times$ pedicel; 1st flagellar node pyriform and enlarged, following nodes cordate; ascoids palmate, with many branches. Thorax without patagium. Wing not unusually broad, apex rounded; radial fork well basad of medial; Cu ending little beyond medial fork. Genitalia as figured; dististyle broad and paddle-shaped; apically lobes of aedeagus and parameres slender and apparently ending at same level; surstyle of usual *Brunettia* shape, apex with many threadlike tenacula bearing large, bell-shaped tips.

Antenna=1.97 mm, wing length=2.92 mm, width=1.50 mm.

♀. Similar to ♂. Eyes separated by 8-10 facet diameters; vertex with sloping sides and posterior border rounded; nodes of flagellum smaller and spindle-shaped, 1st flagellar node also enlarged; fore femur longer than tibia. Genitalia as figured; subgenital plate with pair of small, well separated lobes; spermatheca large and densely reticulate over most of surface.

Wing length=2.87-2.97 mm, width=1.30-1.40 mm.

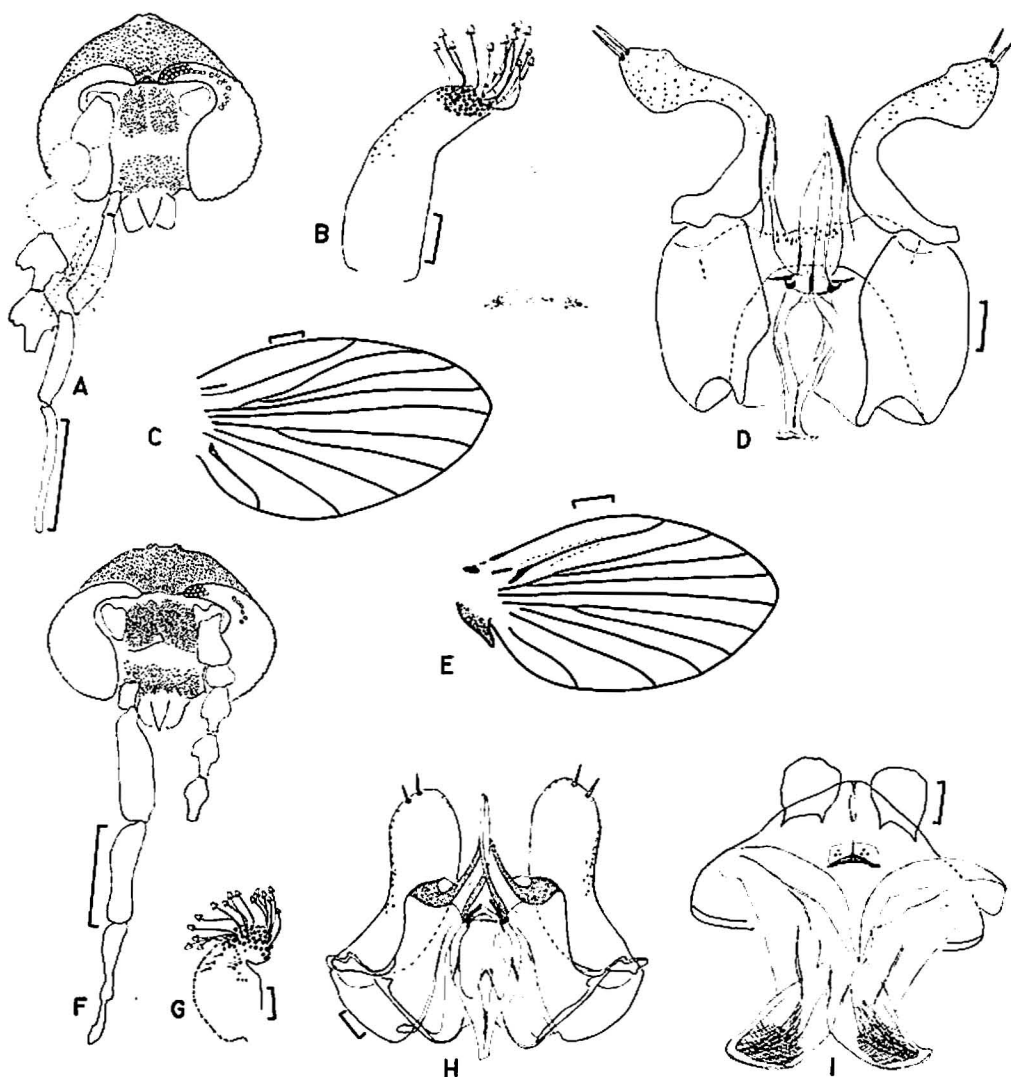


Fig. 55. a-d, *Brunettia sinuosa*, ♂: a, head; b, surstyle; c, wing; d, genitalia, dorsal. f-i, *Brunettia remotyla*: e, ♂ wing; f, ♂ head; g, ♂ surstyle; h, ♂ genitalia, dorsal; i, ♀ genitalia. Scale lines of heads & wings = 0.3 mm; others = 0.05 mm.

Holotype ♂, allotype ♀ (BISHOP 7295): NW New Guinea, Bokondini, 1300 m, 16-23.XI. 1961, Malaise trap, L. & S. Quate. Paratype, 1 ♀, same data as types.

118. *Brunettia exigua* Quate and Quate, new species

Fig. 56a-f.

A small species with relatively narrow wings.

♂. Eyes separated by 1-2.5 facet diameters, interocular suture divided, triangular with clear spot in center; vertex with sides rounded, occiput with small bilobed projection preapically; frons largely covered with hairs, patch with concave posterior margin below suture; ratio of palpal seg-

ments=3:13:15:16. Antenna with scape $1.5\times$ pedicel; node of 1st flagellar segment globular, following nodes a little eccentric, terminal segment reduced; ascoids a pair of simple, coiled rods. Thorax without patagium, but area behind anterior spiracle punctate and setose, probably functions as patagium. Wing relatively narrow; radial fork a little basad of medial; Cu on same level as medial fork. Genitalia as illustrated, of *biformis* type; apex of aedeagus very small, ends well before apex of parameres.

Antenna=0.78-(0.85) mm, wing length=1.15-1.35 mm, width=0.42-0.50 mm.

♀. Similar to ♂. Eyes separated by 2.5-3.5 facet diameters. Genitalia of *biformis* type; lobes of subgenital plate well separated and elongate.

Antenna=0.50-0.63 mm, wing length=1.27-1.45 mm, width=0.45-0.50 mm.

Holotype ♂, allotype ♀ (BISHOP 7296): NW New Guinea, Archbold Lake, 760 m, 26.XI-3.XII.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 4 ♂♂, 5 ♀♀, same data as types; 2 ♂♂, NW New Guinea, Vogelkop, Kebar Val, 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate.

119. **Brunettia chydrea** Quate and Quate, new species Fig. 56g-m.

♂. Eyes contiguous; sides of vertex evenly rounded without protuberance on occiput; frons with rectangular patch of hair over anterior 2/3, with notch on anterior margin; ratio of palpal segments=4:18:23:26. Antenna with scape $2\times$ pedicel; flagellum with nodes a little eccentric, 1st node a little larger than others, terminal segment reduced; ascoids a pair of coiled, simple rods. Thorax with large, dark, C-shaped patagium behind anterior spiracle. Wing broad and apex acute; costal area expanded; R_1 curving toward and joined to R_{2+3} by darkened spot; radial and medial forks on same level; Cu ending far beyond medial fork. Genitalia as figured, of *biformis* type; parameres extend well beyond tip of aedeagus.

Antenna=1.20-1.45 mm, wing length=2.18 mm (1.82-2.37), width=1.42 mm (1.22-1.60).

♀. Similar to ♂. Eyes separated by 5-6 facet diameters; flagellum smaller than in ♂; thorax without patagium; wing smaller and narrower than in ♂. Genitalia as figured, of *biformis* type; lobes of subgenital plate nearly rectangular and rather short.

Wing length=1.87-2.02 mm, width=0.80-0.95 mm.

Holotype ♂, allotype ♀ (BISHOP 7297): NW New Guinea, Archbold Lake, 760 m, 26.XI-3.XII.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM AMNH, BMNH, CSIRO): 27 ♂♂, 2 ♀♀, same data as types; 7 ♂♂, 3 ♀♀, NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate.

120. **Brunettia orbicularis** Quate and Quate, new species Fig. 57a-d.

♂. Eyes contiguous; sides of vertex evenly rounded, small, bilobed protuberance at occiput; frons covered with patch of hairs which extends posteriorly on either side and concave in center; ratio of palpal segments=4:17:22:24. Antenna with scape little less than $2\times$ pedicel; flagellar nodes a little eccentric, 1st node little larger than following, terminal segment reduced; ascoids a pair of simple, coiled rods. Thorax with large, dark, C-shaped patagium behind anterior spiracle. Wing broad, apex rounded; R_1 and R_{2+3} joined by darkened area but R_1 only slightly curved; radial fork little basad of medial. Fore femur longer than tibia. Genitalia as figured, of *biformis* type, parameres extend a little beyond tip of aedeagus.

Antenna=1.03-1.22 mm, wing length=1.76 mm (1.57-2.17), width=1.19 mm (1.00-1.45).

♀. Unknown.

Holotype ♂ (BISHOP 7298): Papua, Murua, 17-22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 14 ♂♂, same data as type; 2 ♂♂, NW

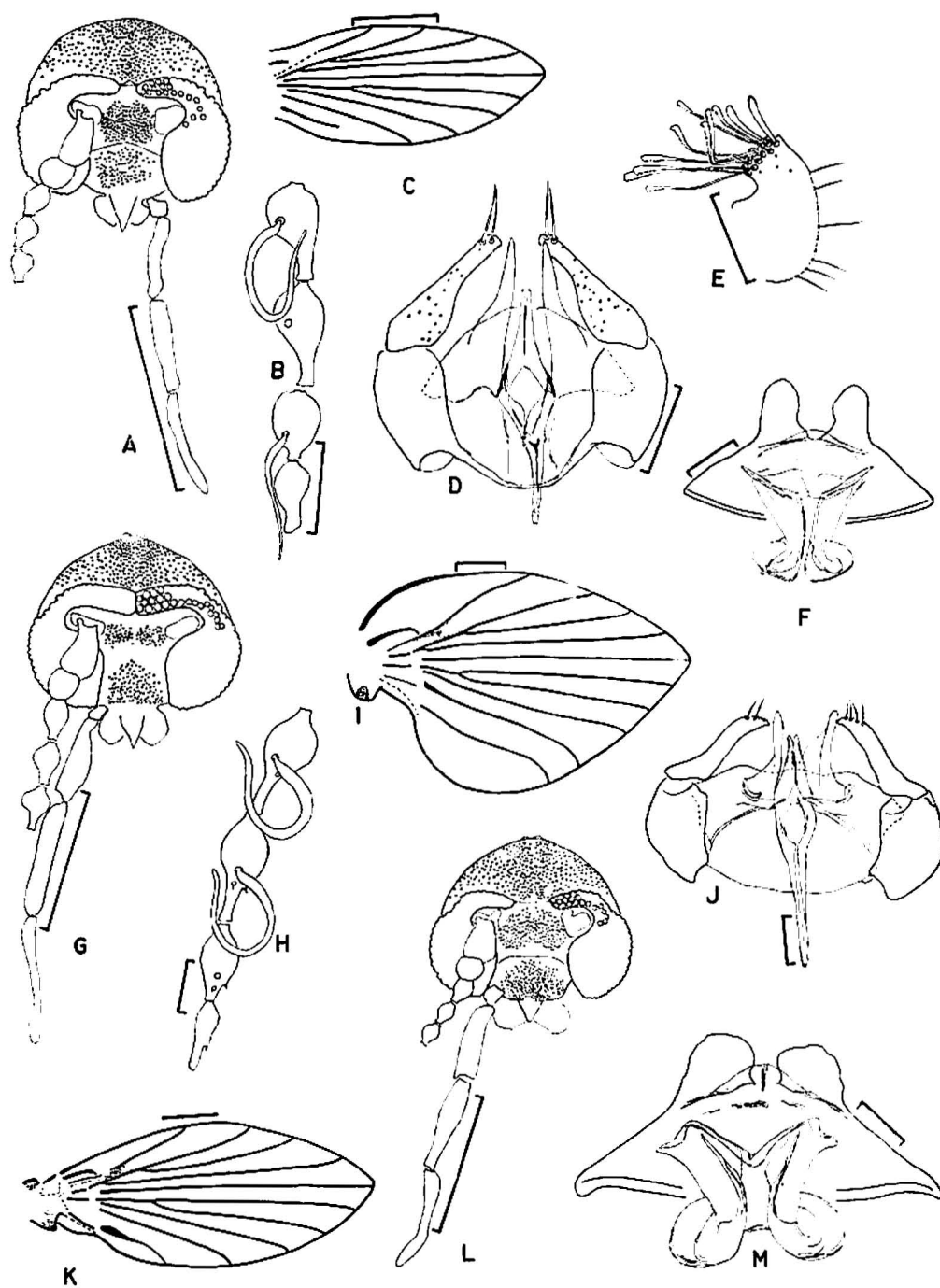


Fig. 56. a-f, *Brunettia exigua*: a, ♂ head; b, ♂ antenna tip; c, ♂ wing; d, ♂ genitalia, dorsal; e, ♂ surstyle; f, ♀ genitalia. g-m, *Brunettia chydaea*: g, ♂ head; h, ♂ antenna tip; i, ♂ wing; j, ♂ genitalia, dorsal; k, ♀ wing; l, ♀ head; m, ♀ genitalia. Scale lines of heads & wings = 0.3 mm; others = 0.05 mm.

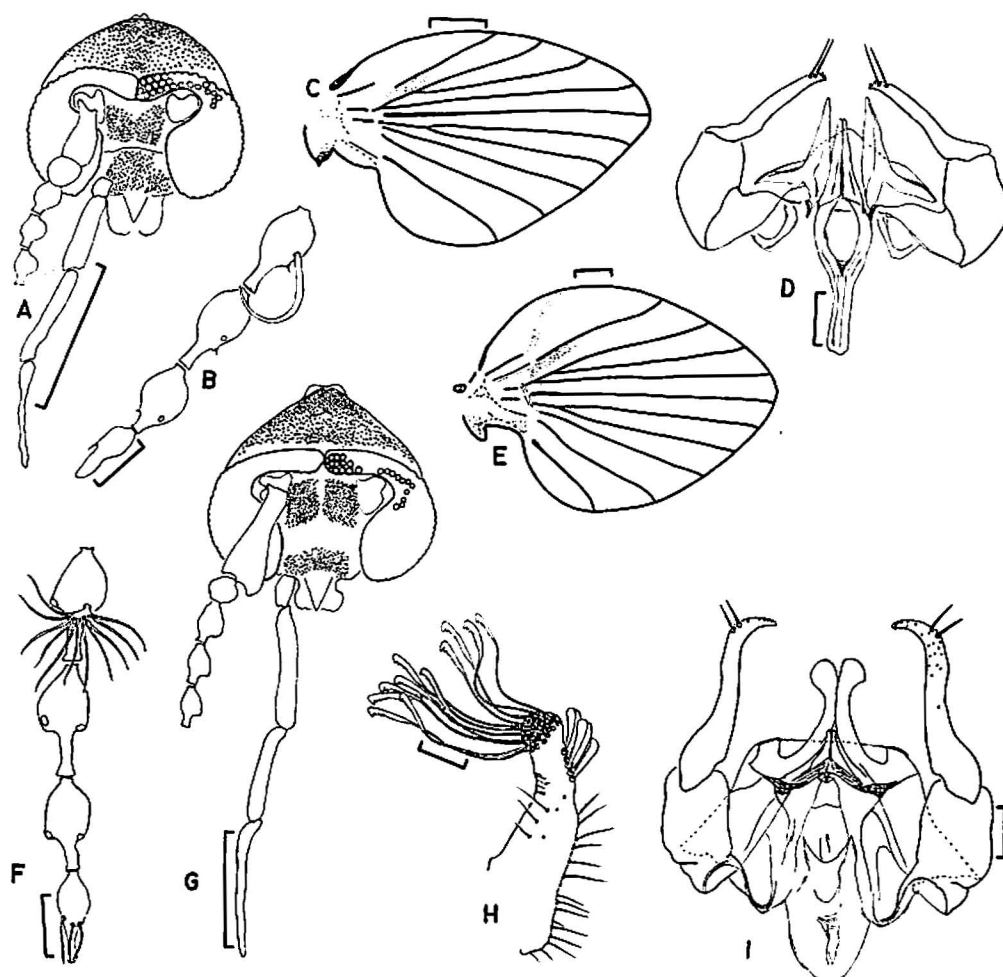


Fig. 57. a-d, *Brunettia orbicularis*, ♂: a, head; b, antenna tip; c, wing; d, genitalia, dorsal. e-i, *Brunettia longiscapa*, ♂: e, wing; f, antenna tip; g, head; h, surstyle; i, genitalia, dorsal. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

New Guinea, Geelvink Bay, Nabire, 2-9.VII.1962, light trap, J.L. Gressitt & J. Sedlacek; NE New Guinea, Sepik Distr., Dreikikir, 400 m, 25.VI.1961, J.L. & M. Gressitt.

121. ***Brunettia longiscapa*** Quate and Quate, new species

Fig. 57e-i.

♂. Eyes contiguous; vertex with steeply sloping sides, occiput with truncate projection which has small indentation on midline; frons with pair of rectangular patch of hairs separated on midline except narrow point of contact; palpus slender, ratio=8:30:25:35. Antenna with scape nearly 4× pedicel, apicomedian angle enlarged and protuberant with dense patch of spatulate hairs; flagellum with nodes cordate, 1st node larger than following; terminal segment reduced; ascoids palmate, with many branches. Thorax without patagium. Wing broad; radial and medial fork about on same level; Cu ends well beyond medial fork. Fore femur longer than tibia. Genitalia as figured; disti-

tyle slender and strongly curved before apex; aedeagus with apical parts slender and clavate at tips; parameres small and short; surstyle elongate, apex with numerous, thread-like tenacula which have comb-shaped tips, few preapical tenacula which are short and thick.

Antenna=1.40-1.62 mm, wing length=2.20-2.72 mm, width=1.37-1.95 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7299): NW New Guinea, Vogelkop, Kebar Val., 550 m, 22-24.I.1962, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 4 ♂♂, same data as types except some 4-31.I.1962; 1 ♂, Papua, Murua, 17-22.XII.1964, Malaise trap, W.A. Steffan.

122. *Brunettia palmata* Quate and Quate, new species

Fig. 58a-e.

♂. Eyes separated by 6 facet diameters, interocular suture slightly convex and weakened in center; vertex with sides evenly rounded, occiput not protuberant but a little depressed on midline; frons with rectangular patch of hair covering most of surface but bare below suture; palpus slender,

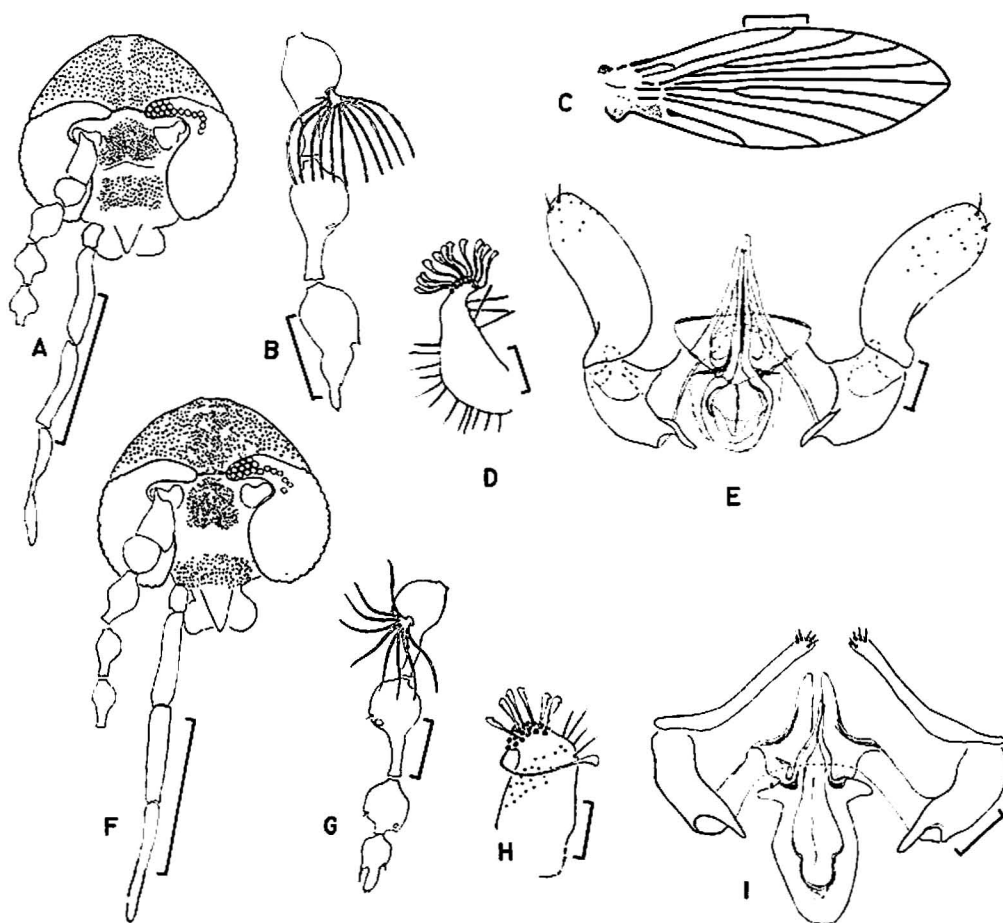


Fig. 58. a-e, *Brunettia palmata*, ♂: a, head; b, antenna tip; c, wing; d, surstyle; e, genitalia, dorsal. f-i, *Brunettia tenuistyla*, ♂: f, head; g, antenna tip; h, surstyle; i, genitalia, dorsal. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

ratio=5:18:17:22. Antenna with scape $1.5\times$ pedicel; flagellar nodes symmetrical basally and a little eccentric distally, 1st node larger than others, terminal segment reduced and partly fused to preterminal; ascoids palmate and with many branches. Thorax without patagium. Wing slender, apex rounded, membrane infusate but lighter in center; radial and medial forks on same level; Cu ending little beyond radial fork. Fore femur much longer than tibia. Genitalia as figured; dististyle large and paddle-shaped; distal part of aedeagus and parameres slender and straight, ending at same level; surstyle elongate but narrowing towards apex, with many thread-like tenacula with bell-shaped tips.

Antenna=1.05 mm, wing length=1.62–1.67 mm, width=0.55–0.60 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7300): NW New Guinea, Vogelkop, Kebar Val., 4–31.I.1962, Malaise trap, L. & S. Quate. Paratype (BISHOP): 1 ♂, same data as type.

The slender wing of *palmata* is unusual for *Brunettia* and appears quite different from other species of the genus. However, the head and genitalic structures clearly indicate the relationship of this species with the genus *Brunettia*.

123. ***Brunettia tenuistyla*** Quate and Quate, new species Fig. 58f–i.

♂. Eyes separated by 4.5 facet diameters, interocular suture a little convex and weakened in center; vertex evenly rounded on sides, occiput with slight indentation on midline; patch of hairs on frons rounded on posterior margin and reaching nearly to suture; palpus slender, ratio=5:18:19:23. Antenna with scape little more than $2\times$ pedicel; flagellum with basal nodes symmetrical and distal nodes eccentric, 1st node larger than others, terminal segment reduced and not fused to preceding; ascoids palmate and with many branches. Thorax without patagium. Wing similar to *palmata*, rather slender, apex rounded, membrane lightly infuscated; radial fork on same level as medial and well distad of base of R_4 ; Cu ending a little beyond medial fork. Fore femur longer than tibia. Genitalia as figured; dististyle slender and a little curved only at base; apical part of aedeagus small; parameres extending well beyond tip of aedeagus; surstyle of usual *Brunettia* shape, tenacula thread-like with comb-like tips.

Antenna=1.25 mm, wing length=1.70 mm, width=0.70 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7301): Papua, Murua, 17–22.XII.1964, Malaise trap, W.A. Steffan.

This species resembles the preceding, *palmata*, in that the wing resembles species of *Telmatoscopus* more than *Brunettia*. However, as with *palmata*, the basic relationships with *Brunettia* is shown in the head and genitalic structures. The two species differ quite markedly in the structure of the male genitalia.

Genus ***Atrichobrunettia*** Satchell

Atrichobrunettia Satchell, 1953, Austral. J. Zool. 1: 413.

Eyes separated. Antenna 15-segmented; flagellar segments nodiform; terminal segment reduced; ascoids simple rods or palmate. First palpal segment much shorter than others, 2, 3, 4 not greatly dissimilar in size. Thorax without patagium. Wing moderately to very slender; membrane without vestiture; R_s pectinate; R_5 ending in or just beyond apex; radial and medial forks near same level. Male genitalia with aedeagus bifurcate and almost always symmetrical, parameres a pair of slender projections flanking aedeagus and terminating in acute apices, surstyle with few tenacula with modified tips in form of comb or flower-like; ♀ genitalia with pair of lobes on subgenital plate longer and usually more slender than in *Brunettia*.

Type species: *Atrichobrunettia alternata* Satchell, by original designation.

The shape of the head, eyes and appendages and general pattern of the genitalia in both sexes of *Atrichobrunettia* show a close relationship to *Brunettia*, but the wing is quite similar to many species of *Telmatoscopus*. *Atrichobrunettia* is thus intermediate between *Brunettia* and *Telmatoscopus*, but we believe it shows strongest relationship to the former.

The New Guinea species are not unlike the two previously described Australian species (Satchell 1953) and obviously are congeneric with them. The New Guinea species fall into two groups and it may be assumed that recent speciation from an earlier division of ancestral stock has produced the two species clusters.

KEY TO NEW GUINEA SPECIES OF ATRICHOBRUNETTIA

1. Cu extending to or beyond level of medial fork and ending in wing margin 2
 Cu short, ending before level of medial fork and not reaching wing margin; small species
 with slender wings 8
- 2(1). Palpus 2 longer than 3 3
 Palpus 2 equal to or shorter than 3 4
- 3(2). ♂ dististyle short and thick, ending in 2 points of nearly equal size; ♀ genitalia as in fig. 59f 124. **bisulca**
 ♂ dististyle C-shaped, with small spur at distal 1/4 much smaller than apical point; ♀ unknown 125. **bisulcoides**
- 4(2). Cu ending distad of medial fork, with preapical curvature 5
 Cu ending at level of medial fork, nearly straight with only slight preapical curvature 126. **solita**
- 5(4). Eyes separated by 4 or more facet diameters 6
 Eyes narrowly separated by 2 facet diameters; ♂ antenna large with large, eccentric nodes 127. **antennata**
- 6(5). Larger species, wing length 1.6 mm or more 7
 Smaller species, wing length 1.2-1.3 mm; ♂ dististyle thick, nearly straight and ending in beak-like apex 128. **spadix**
- 7(6). Wing narrowly pointed; ♂ dististyle but little longer than basistyle, somewhat enlarged apically, but not capitate 129. **pallenscens**
 Wing bluntly rounded at apex; ♂ dististyle very long, 2 × length of basistyle, capitate 130. **clavigera**
- 8(1). R₃ originating free, not attached to R_s 9
 R₃ attached to R_s at base; ♂ paramere lyre-shaped with attenuate sinuous arms arising from broad base 131. **lyrata**
- 9(8). ♂ dististyle ending in attenuate, acute apex, without spurs; lobes of ♀ subgenital plate small and separated by broad U-shaped notch as in fig. 62e 132. **microps**
 ♂ dististyle with 2 short, thick spurs, one at distal 1/3 and one at apex; lobes of ♀ subgenital plate large and narrowly separated as in fig. 62f 133. **tribulosa**

124. *Atrichobrunettia bisulca* Quate and Quate, new species Fig. 59a-f.

♂. Eyes separated by 4 facet diameters, eye bridge attenuate medially, interocular suture coarse and with pair of posterior projections on midline; sides of vertex rounded, occiput a little flattened but not protuberant; frons with hair patch concave posteriorly and convex anteriorly; palpus with segment 2 longer than 3, ratio=5:18:17:21. Antenna with 1st flagellar segment larger than following, remaining segments with rather small, slightly eccentric nodes, ascoids palmate. Wings with radial fork on same level as medial or a little distad; Cu ending beyond level of medial fork, ending in margin and with preapical curve. Fore femur longer than tibia. Genitalia as

figured; dististyle short and thick, ending in 2 points of nearly equal size; basistyle with dark, bluntly pointed spur on apicomedian margin; paired appendages of paramere not discernible; surstyle short and thick, but little longer than wide, with numerous thread-like tenacula with capitate and comb-like tips.

Antenna=1.21-1.22 mm, wing length=1.80-1.87 mm, width=0.65-0.67 mm.

♀. Similar to ♂. Eyes separated by 5.5. facet diameters; flagellum of antenna smaller than in ♂. Genitalia as illustrated; lobes of subgenital plate quite rounded on medial margins.

Antenna=0.97-1.04 mm, wing length=1.75-2.00 mm, width=0.60-0.70 mm.

Holotype ♂, allotype ♀ (BISHOP 7302): NW New Guinea, Waris, 500 m, 24-31.VIII.1959, light trap, T.C. Maa. Paratypes (BISHOP): 1♂, 2♀♀, same data as types.

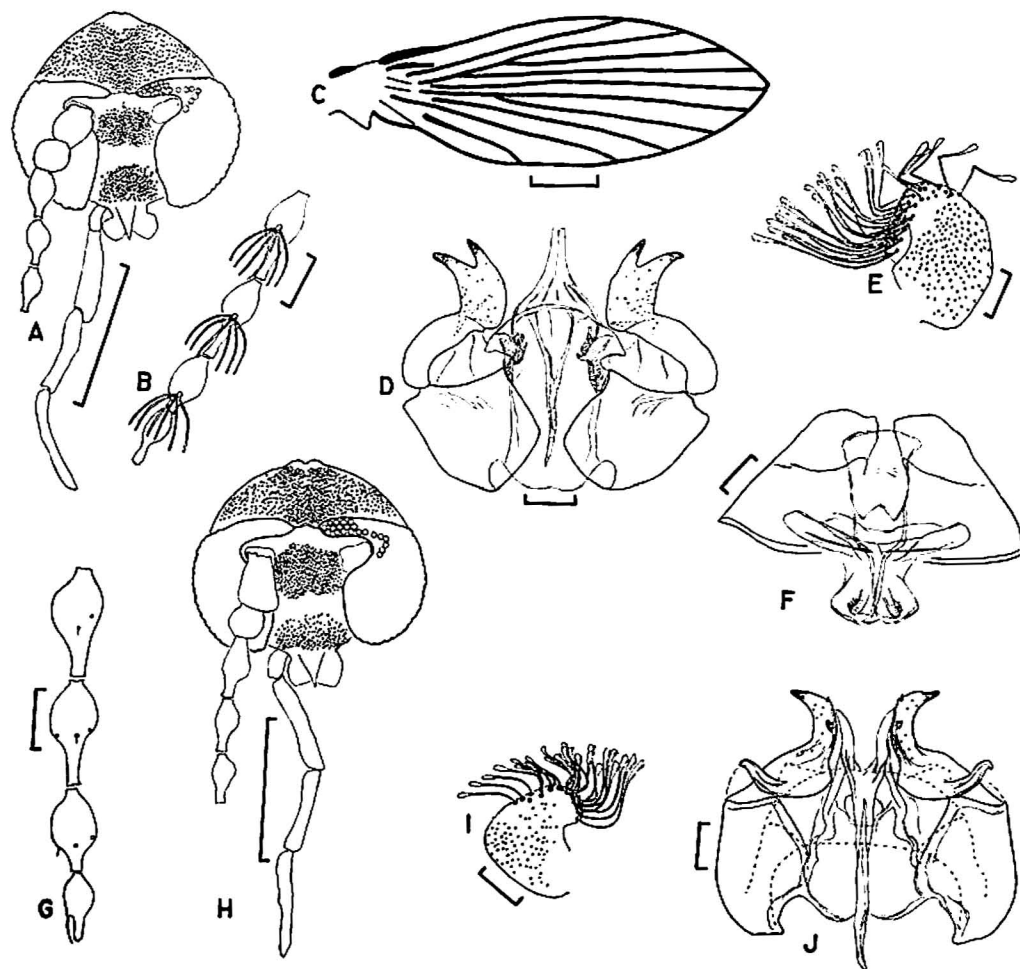


Fig. 59. a-f, *Atrichobrunettia bisulca*: a, ♂ head; b, ♂ antenna tip; c, ♂ wing; d, ♂ genitalia, dorsal; e, ♂ surstyle; f, ♀ genitalia. g-j, *Atrichobrunettia bisulcoides*, ♂: g, antenna tip; h, head; i, surstyle; j, genitalia, dorsal. Scale lines of heads & wing= 0.3 mm; others=0.05 mm.

125. *Atrichobrunettia bisulcoides* Quate and Quate, new species Fig. 59g-j.

♂. Eyes separated by 3.5-4 facet diameters, eye bridge attenuate medially, interocular suture coarse, a little concave; sides of vertex rounded, occiput with pair of small dome-like protuberances; hair patch on frons concave posteriorly and with small notch on midline anteriorly; palpus with segment 2 larger than 3, ratio=6:21:17:23. Antenna with 1st flagellar segment larger than following, following segments with nodes of moderate size and a little eccentric, ascoids palmate. Wing with radial fork a little distad of medial; Cu ending distad of medial fork, with preapical curve. Fore femur longer than tibia. Genitalia as figured; dististyle dark, C-shaped, with small spike-like spur at about distal 1/4 on medial margin; surstyle short, angulate, basal part much wider than apical, apex with numerous thread-like tenacula, some of which with capitate and some with comb-like tips.

Antenna=1.45 mm, wing length=2.00 mm, width=0.75 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7303): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate. Paratype: 1 ♂, same data as type.

The above two species differ from other known species of *Atrichobrunettia* in having the second palpal segment larger than the third. From each other, they differ markedly in genitalic characters, although they agree closely in most other features.

126. *Atrichobrunettia solita* Quate and Quate, new species Fig. 60a-e.

♂. Eyes separated by 3 facet diameters, interocular suture thick, but interrupted in center; sides of vertex rounded, occiput elevated into small protuberance; frons with rectangular patch of hair and wide median band extending almost to suture; ratio of palpal segments=3:14:14:16. Antenna with 1st flagellar segment a little longer than following, following with nodes eccentric, ascoids a pair of long, coiled rods. Wing with radial and medial forks on same level; Cu ending at level of medial fork, with slight preapical curvature. Fore femur longer than tibia. Genitalia as figured; dististyle slender, parameres thick at base, tapering to acute apex, extending well beyond tip of aedeagus; surstyle tapering to rounded apex, with few tenacula having comb-shaped pits.

Antenna=1.03 mm, wing length=1.22 mm, width=0.45 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7304): NW New Guinea, Vogelkop, Kebar Val., 550 m, 22-24.I.1962, Malaise trap, L. & S. Quate.

This small species differs from other known *Atrichobrunettia* by the nearly straight Cu and the male genitalia, especially the slender dististyle.

127. *Atrichobrunettia antennata* Quate and Quate, new species Fig. 60f-i.

♂. Eyes separated by 2 facet diameters, interocular suture thick and a little curved; sides of vertex rounded but slightly angulate, occiput with small protuberance which is concave in center; frons with rectangular hair patch and wide median band extending to suture; ratio of palpal segments=3:10:10:12. Antenna with nodes of flagellum large and eccentric, ascoids palmate. Wing with radial fork slightly distad of medial; Cu ending well distad of medial fork, with preapical curvature. Fore femur longer than tibia. Genitalia as illustrated; surstyle moderately thick, nearly straight with apex curved at sharp angle; aedeagus very small, parameres tapering to rounded apex, bearing few tenacula with comb-like or flower-like tips.

Antenna=1.23 mm, wing length=1.62 mm, width=0.37 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7305): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

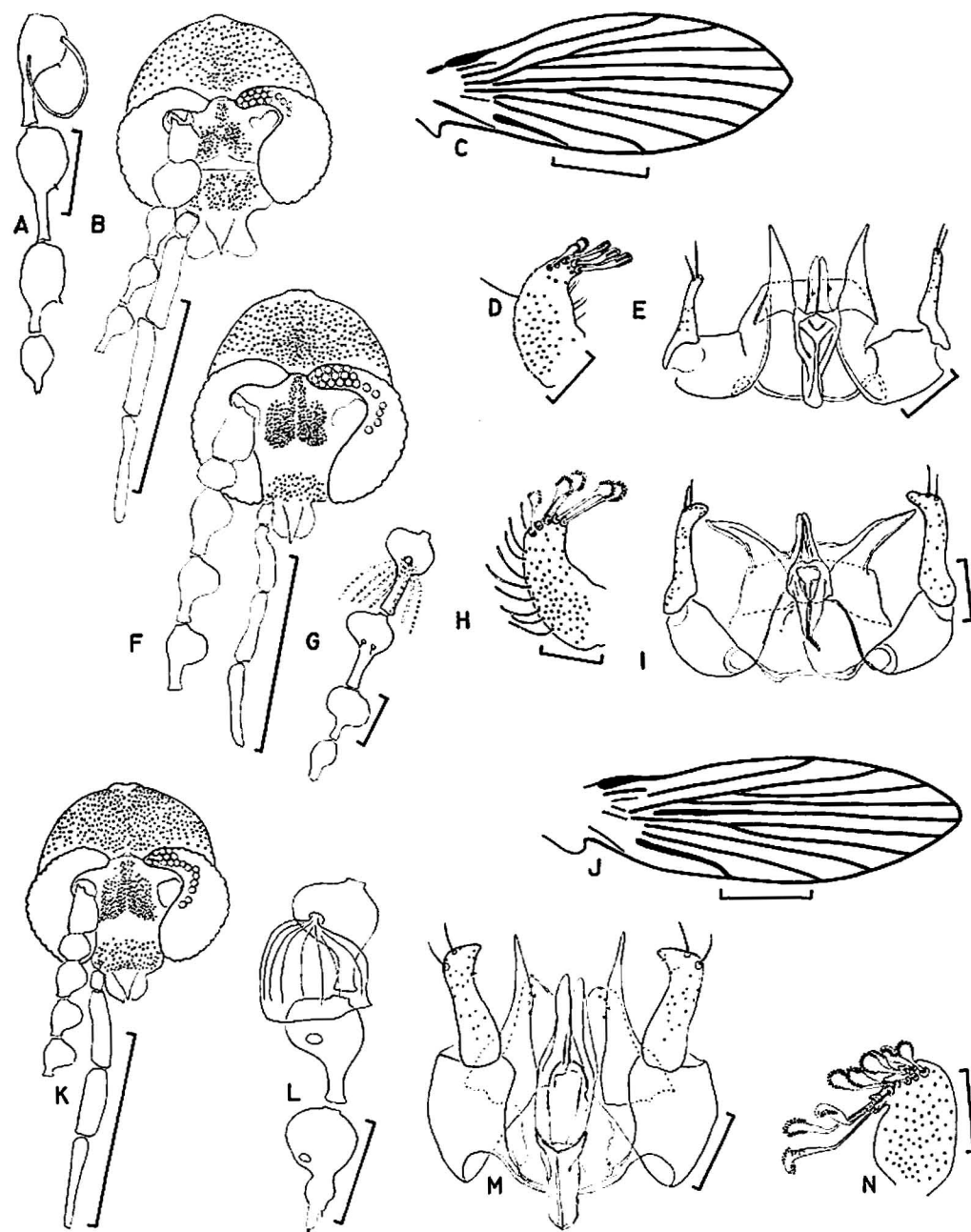


Fig. 60. a-e, *Atrichobrunettia solita*, ♂: a, antenna tip; b, head; c, wing; d, surstyle; e, genitalia, dorsal. f-i, *Atrichobrunettia antennata*, ♂: f, head; g, antenna tip; h, surstyle; i, genitalia, dorsal. j-n, *Atrichobrunettia spadix*, ♂: j, wing; k, head; l, antenna tip; m, genitalia, dorsal; n, surstyle. Scale lines of heads & wings=0.3 mm; others=0.05 mm.

128. *Atrichobrunettia spadix* Quate and Quate, new species Fig. 60j-n.

♂. Eyes separated by 4-5 facet diameters, interocular suture arched, weakened in center with faint median spur; sides of vertex rounded, occiput slightly elevated in pair of dome-like protuberances; hair patch on frons rectangular with wide median band extending posteriorly to suture; ratio of palpal segments=3:12:12:14. Antenna with nodes of flagellum large and eccentric, internodes short, terminal segment reduced and fused to preceding; ascoids large, foliate. Wing with radial and medial forks on same level; Cu ending a little distad of medial fork and with preapical curve. Fore femur longer than tibia. Genitalia as illustrated; dististyle straight, thick and ending in beak-like apex; parameres pigmented, ending well beyond tip of aedeagus; surstyle small, bearing few short tenacula with comb-like or rosette-like tips.

Antenna=(0.75)-0.79 mm, wing length=1.17-1.30 mm, width=0.40-0.42 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7306): NW New Guinea, Vogelkop, Kebar Val., 550 m, 22-24.I.1962, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, CSIRO): 4 ♂♂, same data, but some 4-31.I.1962; 1 ♂, Papua, Murua, 17-22.XII.1964, Malaise trap, W.A. Steffan.

129. *Atrichobrunettia pallescens* Quate and Quate, new species Fig. 61a-d.

♂. Eyes separated by 5.5 facet diameters, eye bridge attenuate medially, interocular suture convex and interrupted in center; sides of vertex rounded, occiput slightly protuberant, concave in center; frons with rectangular hair patch and wide median band extending to suture; ratio of palpal segments=4:14:14:17. Antenna with node of 1st flagellar segment symmetrical, following nodes eccentric, terminal segment very small and fused to preceding, ascoids palmate. Wing with radial fork slightly distad of medial fork; Cu ending little beyond distal fork, with preapical curvature. Genitalia as figured; dististyle rather thick and slightly enlarged apically; aedeagus very slender; parameres slender and extending little beyond tip of aedeagus; surstyle tapering to rounded apex, bearing few tenacula with comb-like tips.

Antenna=0.91 mm, wing length=1.62 mm, width=0.55 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7307): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

130. *Atrichobrunettia clavigera* Quate and Quate, new species Fig. 61c-g.

♂. Eyes separated by 4 facet diameters, eye bridge rounded medially, interocular suture arched and with strong, median spur; sides of vertex rounded, occiput a little indented; hair patch on frons rectangular with short, broad median band extending to 1st row of facets; ratio of palpal segments=5:17:18:22. Antenna with 1st flagellar segment larger than following, following nodes eccentric, especially central ones; ascoids palmate. Wing with radial fork a little distad of medial; Cu ending well distad of medial fork, with preapical curve. Fore femur longer than tibia. Genitalia as figured; dististyle long, attenuate, with capitate tip; basistyle small and slender, parameres extending far beyond tip of aedeagus; surstyle small, apical tenacula long, thread-like with bell-shaped tips and basal ones short with capitate tips.

Antenna=1.21 mm, wing length=1.72 mm, width=0.67 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7308): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate.

Three other males from widely separated localities are similar to *clavigera* in most characters, including the attenuate, capitate dististyle. However, they seem to differ in certain features of the

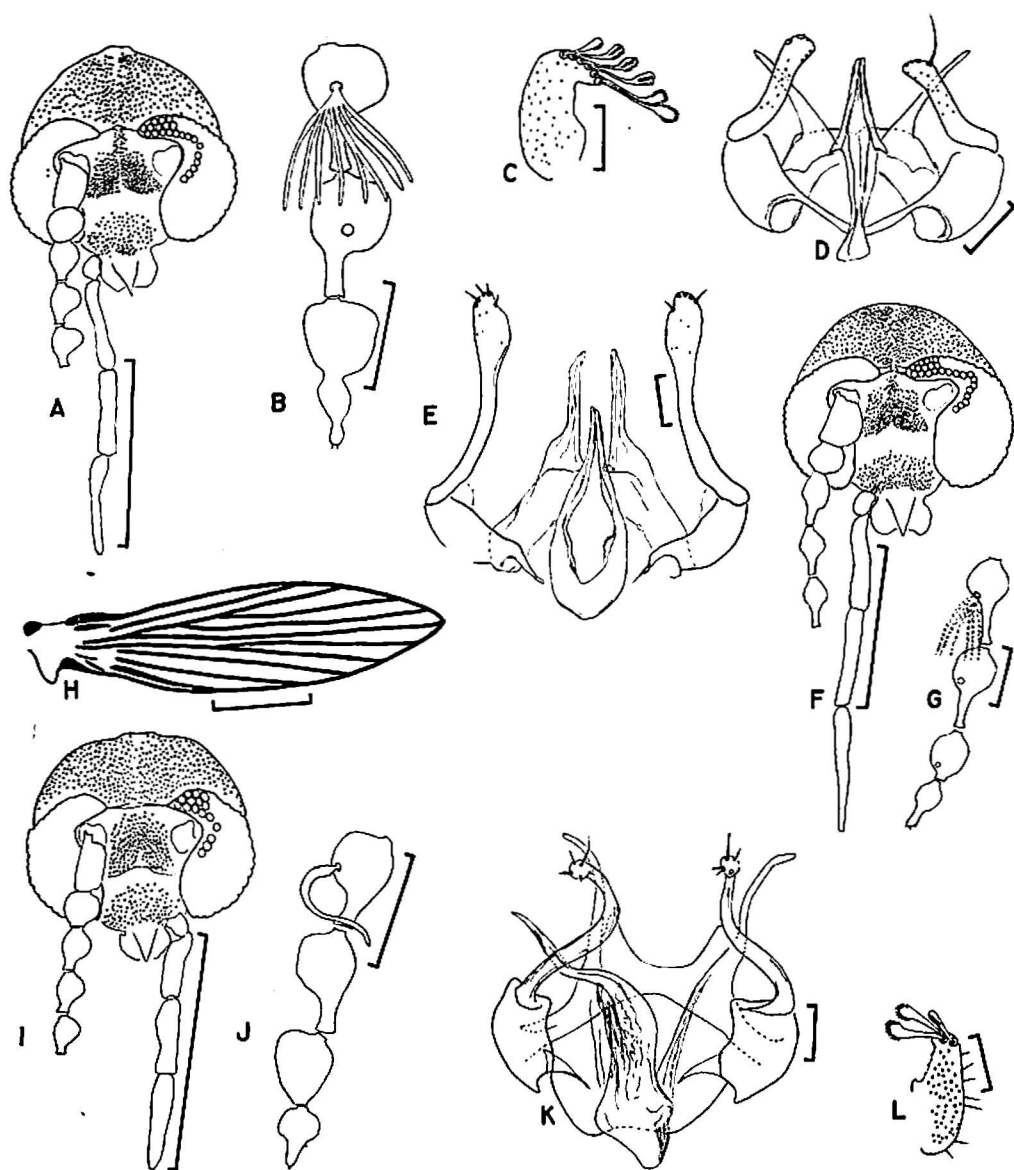


Fig. 61. a-d, *Atrichobrunettia pallescens*, ♂: a, head; b, antenna tip; c, surstyle; d, genitalia, dorsal. e-g, *Atrichobrunettia clavigera*, ♂: e, genitalia, dorsal; f, head; g, antenna tip. h-l, *Atrichobrunettia lyrata*, ♂: h, wing; i, head; j, antenna tip; k, genitalia, dorsal; l, surstyle. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

genitalia and, this, in addition to their scattered distribution, makes us hesitant to include them as a part of the type series. One seems quite likely to be conspecific with *clavigera*, but the other two may possibly present a different species. Additional material is needed for a better understanding of this group.

131. *Atrichobrunettia lyrata* Quate and Quate, new species Fig. 61h-l.

♂. Eyes widely separated by 7 facet diameters, medial angle of eye bridge acute, interocular suture nearly straight and interrupted in center with faint spur on midline; sides of vertex angulate, occiput very slightly elevated, protuberance concave in center; frons largely covered with hair patch which does not have median band; ratio of palpal segments=3:9:9:12. Antenna with nodes of flagellum eccentric, ascoids a pair of simple, coiled rods. Wing very slender and acutely pointed; radial fork a little distad of medial; R_5 attached to R_s at base; Cu straight and short, ending before wing margin. Fore femur longer than tibia. Genitalia as illustrated; dististyle slender and S-shaped, apex clavate and with number of stiff bristles; aedeagus asymmetrical, 1 branch long and sinuous; parameres lyre-shaped; surstyle nearly straight and tapering to rounded apex, with 3 short tenacula having flower-like tips.

Antenna=0.70 mm, wing length=1.20 mm, width=0.30 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7309): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate.

132. *Atrichobrunettia microps* Quate and Quate, new species Fig. 62a-e.

♂. Eyes separated by 6.5-7 facet diameters, median margin of eye bridge acute, interocular suture thick and nearly straight; sides of vertex angulate, occiput with slight protuberance; frons with rectangular patch of hair covering most of surface and without median band; ratio of palpal segments=3:10:10:13. Antenna with nodes of flagellum eccentric, ascoids a pair of simple, coiled rods. Wing slender and acutely pointed; radial fork distad of medial; Cu straight, short and not reaching wing margin; R_5 not attached to R_s at base. Fore femur longer than tibia. Genitalia as figured; dististyle slender, long and somewhat C-shaped, aedeagus racquet-shaped; parameres slender, extend well beyond tip of aedeagus; surstyle nearly straight, apex bearing 3 short tenacula with flower-like tips.

Antenna=0.70 mm, wing length=1.15-1.17 mm, width=0.30-0.32 mm.

♀. Similar to ♂. Flagellar segments smaller than in ♂. Genitalia as illustrated; lobes of subgenital plate slender and separated by U-shaped notch.

Antenna=0.57 mm, wing length=1.30 mm, width=0.30 mm.

Holotype ♂, allotype ♀ (BISHOP 7310): NW New Guinea, Vogelkop, Kebar Val. 550 m, 22-29 and 4-31.I.1962, Malaise trap, L. & S. Quate. Paratype (BISHOP): 1 ♂ same data as types.

133. *Atrichobrunettia tribulosa* Quate and Quate, new species Fig. 62f-j.

♂. Eyes separated by 5-6.5 facet diameters, medial margin of eye bridge angulate, interocular suture thick, nearly straight, interrupted in center; sides of vertex angulate, occiput straight and without visible protuberance; frons covered with rectangular hair patch and without median band; ratio of palpal segments=3:11:11:15. Antenna with nodes of flagellum eccentric, ascoids a pair of simple, coiled rods. Wing slender; radial fork distad of medial; Cu short, straight, not reaching wing margin; base of R_5 free and not attached to R_s . Fore femur longer than tibia. Genitalia as figured; dististyle long and sinuous, with thick spur at distal 1/3 and at apex; parameres slender and curving, extend well beyond tip of aedeagus; surstyle nearly straight, bearing 4 short tenacula with flower-shaped tips.

Antenna=0.74 mm, wing length=1.22-1.27 mm, width=0.37-0.40 mm.

♀. Similar to ♂. Flagellar segments smaller than in ♂. Genitalia as figured; lobes of subgenital plate large and narrowly separated.

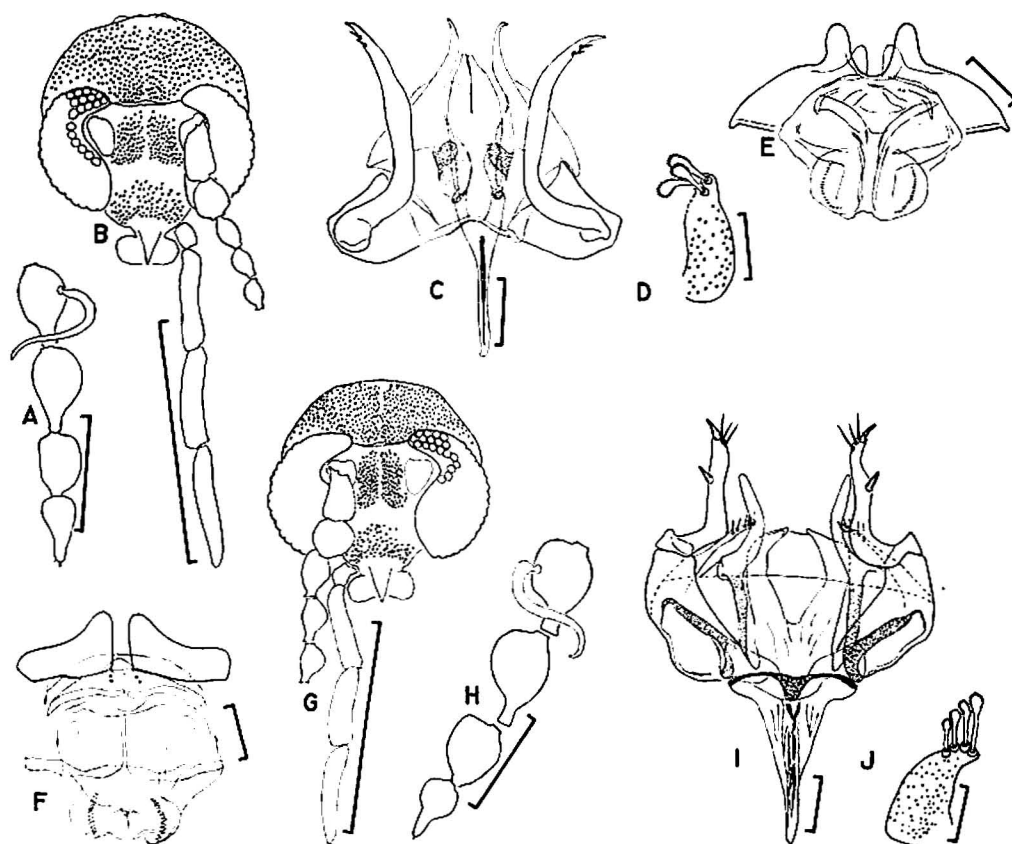


Fig. 62. a-e, *Atrichobrunettia microps*: a, ♂ antenna tip; b, ♂ head; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♀ genitalia. f-j, *Atrichobrunettia tribulosa*: f, ♀ genitalia; g, ♂ head; h, ♂ antenna tip; i, ♂ genitalia, dorsal; j, ♂ surstyle. Scale lines of heads=0.3 mm; others=0.05 mm.

Antenna=0.59–0.64 mm, wing length=1.25–1.35 mm, width=0.35–0.37 mm.

Holotype ♂, allotype ♀ (BISHOP 7311): Papua, Murua, 17–22.XII.1964, Malaise trap, W.A. Steffan. Paratypes (BISHOP): 2 ♂♂, 1 ♀, same data as types.

The above three species, *lyrata*, *microps*, and *tribulosa*, are closely related species which differ from other New Guinea *Atrichobrunettia* by the small size, narrowly pointed wings, and short, incomplete Cu. They are largely distinguished from each other by genitalic characters which are markedly dissimilar although non-sexual characters show few differences.

Genus *Trichopsychoda* Tonnoir 1922

Quate, 1959, Ann. Ent. Soc. Amer. 52: 446.

Type species. *Psychoda hirtella* Tonnoir, by orig. desig.

Range. Recorded in all regions but Neotropical.

The haired wing membrane, incomplete wing forks and small ♂ surstyle bearing thread-like tenacula with bell-like tips are reliable characters for the proper placement of species in *Trichopsychoda*. If the vestiture on the wing cannot be seen, females may be placed in *Philosepedon*, although

the wing forks are seldom incomplete in that genus. The association of females with males and recognition of the distinctive surstyle will clarify their classification.

KEY TO NEW GUINEA SPECIES OF TRICHOPSYCHODA

1. Antenna 16-segmented; ♂ surstyle but little longer than wide, tenacula only thread-like with bell tips 2
- Antenna 15-segmented; ♂ surstyle much longer than wide, tenacula of 2 types 3
2. ♂ dististyle evenly tapering to slender apex 134. **spicata**
- ♂ dististyle with large, lobular enlargement preapically 135. **clavata**
3. ♂ surstyle with 2 thread-like tenacula; dististyle with 2 small, protuberances preapically 136. **binodata**
- Surstyle with 3 thread-like tenacula; dististyle ending in rounded, recurved apex 137. **pollex**

134. *Trichopsychoda spicata* Quate and Quate, new species Fig. 63a-d.

♂. Eyes narrowly separated by less than 1/2 facet diameter, interocular suture very short and with short median spur, eye bridge very wide, much wider than vertex, with 4 rows of facets; frons with rectangular patch of hair with slender, triangular median band extending to lower row of facets; ratio of palpal segments=7:9:10:12. Antenna 16-segmented; scape and pedicel subequal; terminal 3 segments reduced and separated; ascoids Y-shaped. Fore femur longer than tibia. Genitalia as figured; aedeagus slender, acutely pointed, and with preapical dorsal spike; paramere asymmetrical and trilobed; dististyle evenly tapering to slender apex, apex ending in slightly inflated, recurved point; surstyle little longer than wide, with rounded projection from apicoventral margin, with numerous thread-like tenacula bearing bell-like tips.

Antenna=0.97-1.07 mm, wing length=1.58 mm (1.40-1.80), width=0.58 mm (0.52-0.67).

♀. Similar to ♂. Genitalia as figured; subgenital plate deeply concave at apex, dark bar on midline of inner face conspicuous, surface of spermatheca striate.

Antenna=0.78-0.88 mm, wing length=1.71 mm (1.55-1.95), width=0.62 mm (0.55-0.70).

Holotype ♂, allotype ♀ (BISHOP 7312): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 13 ♂♂, 5 ♀♀, same data as types; 11 ♂♂, 3 ♀♀, NW NG, Bokondini, 1300 m, 16-23.XI.1961, light trap, L. & S. Quate; 2 ♂♂, 10 km W of Archbold Lake, 1050 m, 3-5.XII.1961, light trap, L. & S. Quate; 8 ♂♂, 5 ♀♀, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate; 1 ♀, Biak, 28.VII.1955, light trap, J.L. Gressitt; 1 ♂, 2 ♀♀, NE New Guinea, Adelbert Mts, Wanuma, 1000 m, 23.X.1958, light trap, Gressitt; 3 ♂♂, upper Jimmi Val., Korop, 1300 m, 12.VII.1958, light trap, Gressitt; 3 ♂♂, 15 km W of Lae, 17-18.IV.1965, Y.M. Huang & W.A. Steffan; 1 ♀, Wau, 31.III.1965, light trap, Steffan; 3 ♀♀, Bainyik, nr. Maprik, 225 m, 20-21.VI.1965, Malaise trap, J.L. & M. Gressitt; 1 ♂, Pengagl Camp, E slope of Mt. Wilhelm, 2770 m, 8-10.IX.1959, 6th Arch. Exped; 6 ♂♂, Kimi Creek Camp, NE slope of Mt Michael, 1980 m, 31.VIII.1959, 6th Archb. Exped; 3 ♂♂, Purosa Camp, Okapa area, 1950 m, 23.IX.1959, 6th Arch. Exped; 3 ♂♂, Kratke Mts, Araua, 1400 m, 10.X.1959, 6th Arch. Exped; 2 ♂♂, Kratke Mts, Kassam, Lae-Goroka Rd, 1370 m, 30.X.1959, 6th Arch. Exped; 1 ♂, New Britain, Gazelle Pen, Malmalwan-Vunakanau, 3.V.1956, light trap, Gressitt.

Other specimens. NW New Guinea, Hollandia, 6.IX.1944, 1 ♂; NE New Guinea, Karimui, 1000 m, 4.VI.1961, J.L. & M. Gressitt, 1 ♂.

135. *Trichopsychoda clavata* Quate and Quate, new species Fig. 63e-f.

♂. Eyes narrowly separated by less than 1/2 facet diameter, interocular suture short with strong median spur, eye bridge very wide, much wider than vertex; frons with rectangular patch of

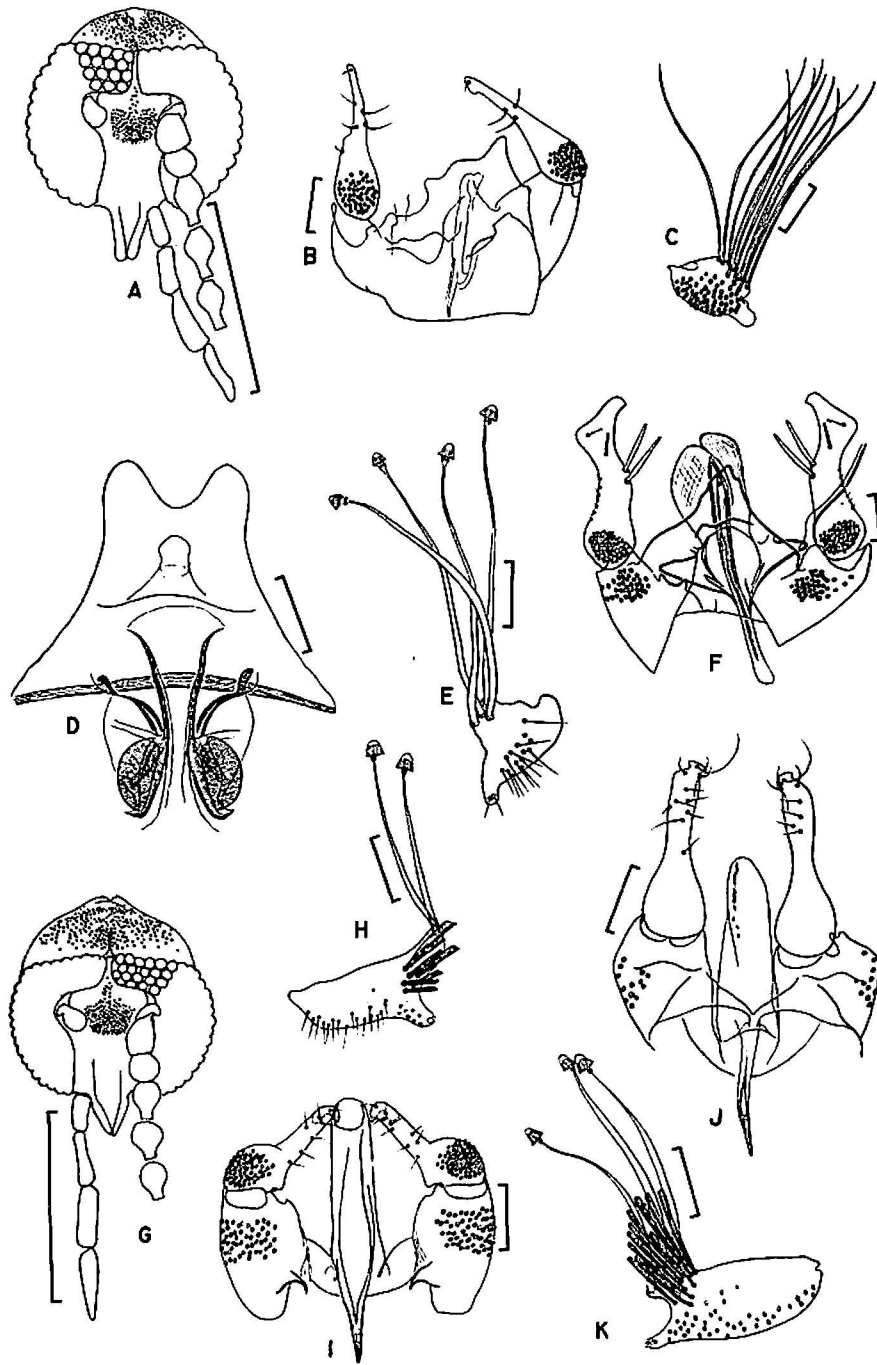


Fig. 63. a-d, *Trichopsychoda spicata*: a, ♂ head; b, ♂ genitalia, dorsal; c, ♂ surstyle; d, ♀ genitalia. e-f, *Trichopsychoda clavata*, ♂: e, surstyle; f, genitalia, dorsal. g-i, *Trichopsychoda binodata*, ♂: g, head; h, surstyle; i, genitalia, dorsal. j-k, *Trichopsychoda pollex*, ♂: j, genitalia, dorsal; k, surstyle. Scale lines of heads=0.3 mm; others=0.05 mm.

hair and with triangular median band extending to lower row of eye facets; ratio of palpal segments=7:8:9:10. Antenna 16-segmented; scape and pedicel subequal; terminal 3 segments reduced and separated; ascoids Y-shaped. Fore femur longer than tibia. Genitalia as figured; dististyle irregular and asymmetrical, with large lobular enlargement preapically, 2 large spines on lateral margin opposite enlargement and 2 smaller spines, 1 of which in center of appendage and other in center of enlargement; aedeagus slender and acutely pointed; paramere asymmetrical and with sharp apical projection; surstyle nearly as long as wide, with large, triangular projection on apicoventral angle, bearing a number of thread-like tenacula with bell-shaped tips.

Wing length=1.35-1.45 mm, width=0.50-0.55 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7313): NW New Guinea, Hollandia-Binnen, 24.XI.1957, light trap, J.L. Gressitt. Paratypes (BISHOP): 2 ♂♂, same data as type; 1 ♂, NE New Guinea, Kratke Mts, Kassam, on Lae-Goroka Rd, 1370 m, 21.XI.1959, 6th Archb. Exped.

136. **Trichopsychoda binodata** Quate and Quate, new species Fig. 63g-i.

♂. Eyes separated by about 1 facet diameter, interocular suture thick with long median projection, eye bridge narrower than vertex; frons with rounded patch of hairs and elongate median band extending above lower facet row, occiput with pair of dome-like protuberances separated by narrow cleft; ratio of palpal segments=6:9:10:11. Antenna 15-segmented; scape little longer than pedicel; terminal 2 segments reduced, separated; ascoids Y-shaped. Fore femur longer than tibia. Genitalia as figured; dististyle rounded at base and nearly parallel-sided over most of distal part, 2 small lobes on dorsal surface preapically, apex curved cephalad; aedeagus straight-sided and tubular with slender base; surstyle considerably longer than wide, with prominent lobe on apicoventral angle, with 2 thread-like tenacula bearing bell-shaped tips and about 12 shorter, straight-sided tenacula with feathered tips.

Antenna=0.77 mm, wing length=1.45-1.52 mm, width=0.52-0.60 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7314): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM): 1 ♂, same data as type; 3 ♂♂, NW NG, Bokondini, 5-11.XI.1961, and 16-23.XI.1961, light trap, L. & S. Quate.

137. **Trichopsychoda pollex** Quate and Quate, new species Fig. 63j-k.

♂. Eyes narrowly separated by about 1/2 facet diameter, interocular suture indistinct but apparently present and with short median projection, eye bridge subequal to height of vertex; frons with rather dense patch of hair and elongate median band extending to 2nd row of facets; ratio of palpal segments=6:7:9:11. Antenna 15-segmented; scape and pedicel subequal; terminal 2 segments reduced and separated; ascoids Y-shaped. Fore femur longer than tibia. Genitalia as figured; dististyle enlarged basally and nearly parallel-sided to preapex, apex with rounded, recurved points; aedeagus tubular but sides a little convergent distally; surstyle much longer than wide, with slender lobe on apicoventral margin, with 3 thread-like tenacula bearing bell-shaped tips and about 12 shorter, spatulate tenacula.

Antenna=0.92 mm, wing length=1.27-1.32 mm, width=0.47-0.50 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7315): NE New Guinea, Adelbert Mts, Wanuma, 1000 m, 23.X.1958, light trap, J.L. Gressitt. Paratype (BISHOP): 1 ♂, same data as type.

Genus *Epacreton* Quate 1965

Quate, 1965, Pac. Ins. 7: 863.

Type-species. *Epacreton pinnagum* Quate, by orig. desig.

Range. Philippines, New Guinea.

Closely related to *Psychoda*, *Epacreton* is based on the broad head, enlarged and compact flagellar segments, and short ♀ cerci. One of the New Guinea species has a most peculiarly modified antennal tip in the female, but this does not appear to be a generic character, although at present only a few females are known.

KEY TO MALES OF NEW GUINEA SPECIES OF EPACRETON

1. Hair patch on frons without median band in ♂; palpus 2 considerably shorter than 3..... 2
 Hair patch on frons with triangular median band extending posteriorly to lower margin
 of eye bridge; palpus 2 and 3 subequal140. **breviceps**
2. ♂ aedeagus with pair of transverse bars at about distal 1/3; ♀ with terminal 3 segments
 grossly modified, much larger than preceding138. **insolitum**
 ♂ aedeagus very broad, without transverse bars, paramere setose; ♀ unknown139. **anacris**

138. *Epacreton insolitum* Quate and Quate, new species Fig. 64a-h.

♂. Eyes separated by little more than 1/2 facet diameters, interocular suture absent; vertex shorter than width of eye bridge; frons densely covered with hair on anterior part, posterior border of hair patch concave in center; palpus with segments 2 and 3 a little inflated, ratio=6:9:12:22; labellum with 6 teeth and 5 spines. Antenna with scape nearly 1.5× pedicel; flagellar segments strongly nodiform and with well developed nodes; terminal segment reduced, pyriform and clearly separated from preceding; ascoids Y-shaped. Fore femur shorter than tibia. Genitalia as figured; dististyle evenly tapering to acute apex; aedeagus rather broad and ending in 2 membranous lobes, at distal 1/3 with pair of transverse ridges on ventral side; surstyle short and stocky, with single tenaculum.

Antenna=(0.80)–0.99 mm, wing length=1.45–2.12 mm, width=0.70–0.87 mm.

♀. Similar to ♂; eyes separated by little more than 1 facet diameter; vertex higher than width of eye bridge; hair patch on frons with long triangular projection on midline rising from concavity; terminal 3 segments of antenna grossly modified, all much larger than preceding, nodes very large and internodes long and slender, terminal segment elongate, pyriform and larger than preceding. Genitalia as figured; subgenital plate small and concave apically; spermatheca small and indistinct; cercus short and hemispherical.

Antenna=0.70–0.80 mm, wing length=1.50–1.62 mm, width=0.70–0.75 mm.

Holotype ♂, allotype ♀ (BISHOP 7316): NW New Guinea, Hollandia, VII–XII.1961, at light, R.T. Simon Thomas. Paratypes (BISHOP): 1 ♀, same data as types; 1 ♂, NW NG, Hollandia-Binnen, I.XI.1958, J.L. Gressitt.

The unusual modification of the apex of the female antenna is noteworthy. This is apparently the first instance in the family in which the female seems to bear secondary sexual characters instead of the male. Whether this phenomenon will prove to be common in the *Epacreton* is not possible to say; the only other species in which the female is known has normal antenna, and unfortunately the other species of this genus are not known in the female sex.

139. *Epacreton anacris* Quate and Quate, new species Fig. 64 i-k.

♂. Eyes narrowly separated by less than 1/2 facet diameter, interocular suture absent; frons densely covered with hairs, patch without median projection; labellum with 5 spines (number of

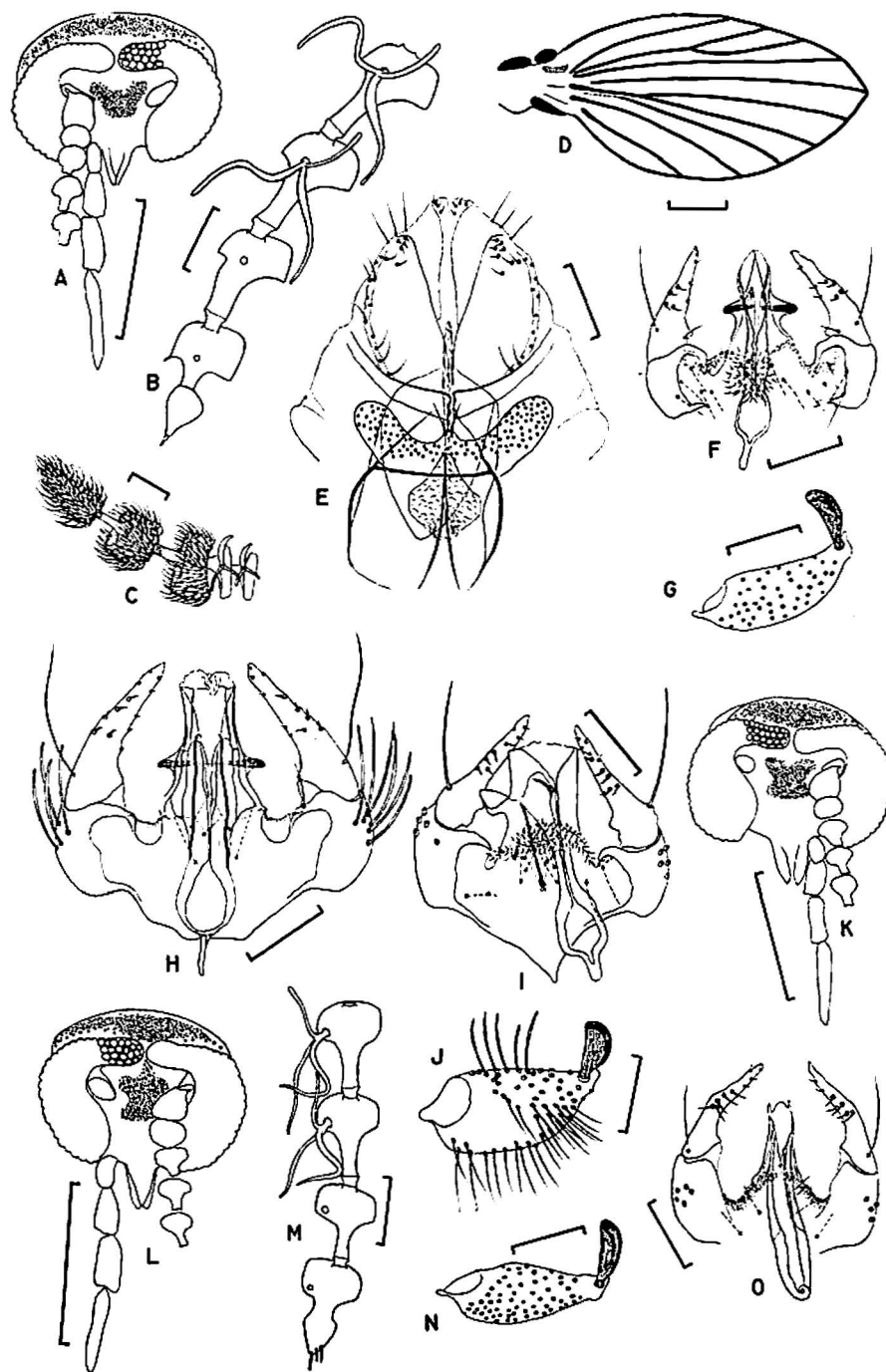


Fig. 64. a-h, *Epacreton insolitum*: a, ♂ head; b, ♂ antenna tip; c, ♀ antenna tip; d, ♂ wing; e, ♀ genitalia; f, ♂ genitalia, dorsal (paratype); g, ♂ surstyle; h, ♂ genitalia, dorsal (holotype). i-k, *Epacreton anacris*, ♂: i, genitalia, dorsal; j, surstyle; k, head. l-o, *Epacreton breviceps*, ♂: l, head; m, antenna tip; n, surstyle; o, genitalia, dorsal. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

teeth indiscernible); palpus 3 considerably longer than 2, ratio=6:7:11:18. Antenna with scape about $1.5 \times$ pedicel; ascoids Y-shaped, of *Psychoda* shape; apex of antenna broken. Thorax with dense, elongate patch of hairs on mesepisternum behind anterior spiracle. Genitalia as figured; dististyle tapering to acute apex; with long seta near base and number of shorter setae over distal $1/2$; aedeagus very broad and truncate apically (however, apex may be broken); surstyle broad and short, tenaculum short.

Wing length=1.67 mm, width=0.80 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7317): NW New Guinea, Hollandia-Binnen, 24.XI.1958, light trap, J.L. Gressitt.

140. **Epacreton breviceps** Quate and Quate, new species Fig. 64 1-o.

♂. Eyes narrowly separated by less than $1/2$ facet diameter; interocular suture absent; frons with dense patch of hairs, triangular median band extends posteriorly to lower margin of eye bridge; ratio of palpal segments=4:8:9:15; labellum with 6 teeth and 4 spines. Antenna 14-segmented; scape about $1.5 \times$ pedicel; terminal segment reduced and partly fused to preceding; ascoids Y-shaped, of *Psychoda* shape. Genitalia as figured; dististyle tapering to acute apex, with long seta near base and a number of shorter setae on distal $1/2$; aedeagus slender and tubular; surstyle short and broad, with single tenaculum.

Antenna=0.83 mm, wing length=1.42 mm, width=0.70 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7318): NW New Guinea, Vogelkop, Manokwari, 21.VII.1957, light trap, D.E. Hardy.

Genus **Philosepedon** Eaton

Quate, 1959, Ann. Ent. Soc. Amer. 52: 448.

Type-species. *Psychoda humeralis* Meigen, by orig. desig.

Range. Cosmopolitan.

This genus is much like *Psychoda*, except the species often have a bulbous labellum without the blunt, labellar teeth of *Psychoda*, and are larger. The ♂ aedeagus is symmetrical, in contrast to the usually asymmetrical aedeagus of *Psychoda*. The antennal ascoids of *Philosepedon* are Y-shaped, which is the chief distinction between the genus and *Threticus*.

KEY TO NEW GUINEA SPECIES OF PHILOSEPEDON

1. Antenna 16-segmented; R_5 heavier than most other veins..... 2
- Antenna 15-segmented; veins of about equal development..... 4
2. Eyes narrowly separated by less than 1 facet diameter; median margin of eye bridge truncate 3
- Eyes separated by 4-5 facet diameters; median margin of eye bridge acute141. **tineiformis**
3. ♂ surstyle with 2 tenacula, preapical one arising from digitiform base.....142. **torosa**
- ♂ surstyle with 8 tenacula in straight, comb-like row143. **pectinata**
4. Eyes separated 5
- Eye contiguous over upper $1/2$ of eye bridge; ♂ dististyle with 1 tenaculum144. **quadricuspis**
5. Palpal segments 1 & 2 subequal; margin of eye bridges convergent posteriorly; ♂ dististyle with 1 tenaculum 6
- Palpus 1 nearly $1/2$ length of 2; median margins of eye bridges parallel; ♂ dististyle with multiple tenacula; ♀ unknown146. **forcipata**
6. Eye bridge with posterior projection on midline; ♂ dististyle and basistyle subequal in length; apex of ♀ subgenital plate with shallow concavity145. **sessilis**

Eye bridge straight, without projection; ♂ dististyle longer than basistyle; apex of ♀ plate with V-shaped notch147. *setosa*

141. ***Philosepedon tineiformis*** (Edwards) Fig. 65a-c.

Lepidopsychoda tineiformis Edwards, 1928, Ins. Samoa (Brit. Mus. Nat. Hist.) 6(2): 72.—Satchell, 1953, Proc. R. Ent. Soc. Lond. (B) 22: 188.

Philosepedon tineiformis: Quate, 1962, Pac. Ins. 4: 42.

Telmatoscopus (Minioceros) squamalatus Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 455.

DISTRIBUTION: Borneo, New Guinea, Samoa, Fiji, Caroline Is., Mariana Is.

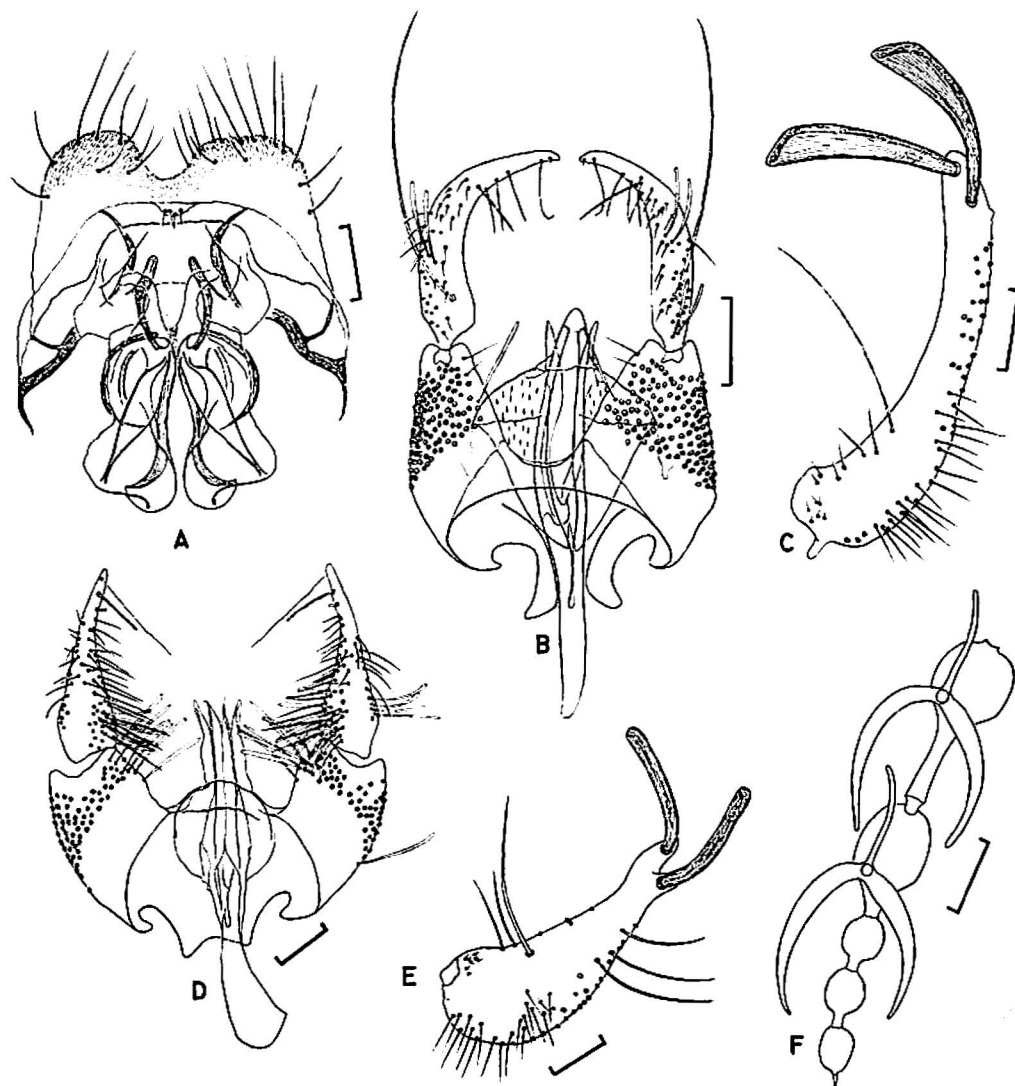


Fig. 65. a-c, *Philosepedon tineiformis*: a, ♀ genitalia; b, ♂ genitalia, dorsal; c, ♂ surstyle. d-f, *Philosepedon torosa*, ♂: d, genitalia, dorsal; e, surstyle; f, antenna tip. Scale lines=0.05 mm.

NW NEW GUINEA: Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, L. & S. Quate.

The distinctive male and female genitalia, as illustrated, and the widely separated eyes with acute eye bridges makes this species easily distinguished from other New Guinea species of *Philosepedon*.

142. ***Philosepedon torosa*** Quate and Quate, new species Fig. 65d-f.

♂. Eyes narrowly separated, eye bridges truncate on median margin; vertex on midline little higher than width of eye bridge, sides rounded, occiput not elevated; frons largely covered with hairs, small triangular projection on midline; ratio of palpal segments=5:13:15:16. Antenna 16-segmented; scape and pedicel subequal in size; terminal 3 segments reduced and separated; ascoids Y-shaped with broad anterior blades. Wing apparently with vestiture on membrane; veins faint except enlarged area near center of R_{2+3} and enlarged basal part of Cu. Fore femur longer than tibia. Genitalia as figured; dististyle broad at base and tapering to an acute apex, with 2 long hairs preapically; aedeagus ending in 4 equal sized, sharp points; dististyle elongate, with 2 parallel-sided tenacula, preapical one arising from digitiform base.

Antenna=1.50 mm, wing length=2.00-2.25 mm, width=0.85-0.92 mm.

♀. Unknown.

Holotype ♂ (AMNH): NE New Guinea, Kratke Mts., Kassam on Lac-Goroka Rd, 1370 m, 30.X.1959, 6th Archbold Exped. Paratypes (AMNH, Bishop): 1 ♂, NE New Guinea, Kratke Mts., Arau, valley of upper Wanton R, 1400 m, 18.X.1959, 6th Archb. Exped; 1 ♂, NE New Guinea, Okapa area, 1950 m, 30.IX.1959, 6th Arch. Exped.

143. ***Philosepedon pectinata*** Quate and Quate, new species Fig. 66a-c.

♂. Eyes separated by little less than 1 facet diameter, median margin of eye bridges truncate, interocular suture thick with long medial spur; vertex about $1.5 \times$ width of eye bridge, occiput with small cleft on midline; frons hair patch rounded on anterolateral margin and with median extension reaching to lower margin of eye bridge; ratio of palpal segments=5:11:13:15. Antenna 16-segmented; scape about $1.5 \times$ pedicel; terminal 3 segments reduced and separated; ascoids lacking but presumably Y-shaped. Wing with veins faint except R_5 and enlargement in center of R_{2+3} and basal part of Cu; R_3 , R_4 , R_5 close together beyond radial fork. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to acute apex; aedeagus broad distally and ending in 2 separated points; surstyle with 8 tenacula in straight, comb-like row.

Antenna=1.20 mm, wing length=1.87 mm, width=0.72 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7319): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962. light trap, L. & S. Quate.

This species appears to be closely related to the Borneo species *parciproma* Quate (1962). The species have similar genitalia, the most conspicuous character of which is the preapical tenaculum arising from a dome-like protuberance of the surstyle. The wing venation and head features also are similar, and there seems little doubt that these species have arisen from a common ancestor.

144. ***Philosepedon quadricuspis*** Quate and Quate, new species Fig. 66d-h.

♂. Eyes contiguous on upper 1/2 and separated into a V-shaped notch on lower 1/2; vertex subequal to width of eye bridge, occiput slightly elevated and flattened on midline; frons covered with hair on anterior part and with narrow median extension reaching to 1st row of facets; ratio of palpal segments=7:7:6(7):8; labellum with several spines on apical border, but without blunt teeth as in *Psychoda*. Antenna 15-segmented; scape and pedicel subequal; node of 1st flagellar segment pyriform and larger than following, following globular; terminal 2 segments reduced and separated; ascoids Y-shaped, 1 anterior blade very broad, other slender. Wing veins of equal development;

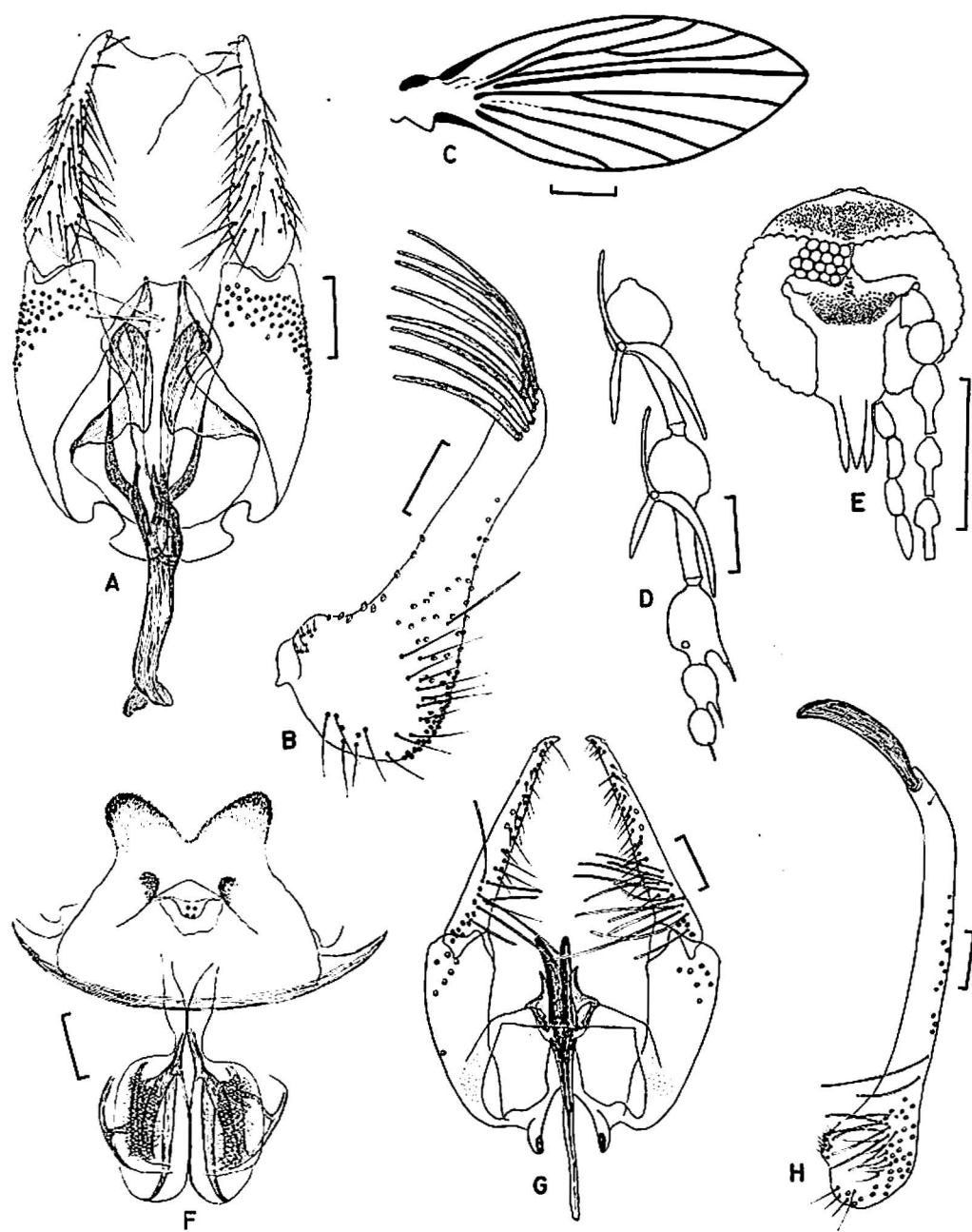


Fig. 66. a-c, *Philosepedon pectinata*, ♂: a, genitalia, dorsal; b, surstyle; c, wing. d-h, *Philosepedon quadricuspis*: d, ♂ antenna tip; e, ♂ head; f, ♀ genitalia; g, ♂ genitalia, dorsal; h, ♂ surstyle. Scale lines of head & wing=0.3 mm; others=0.05 mm.

M_2 weakened at fork. Fore femur longer than tibia. Genitalia as figured; dististyle long and slender, longer than basistyle; aedeagus ending in 2 pairs of points, outer pair lighter in color and shorter than median pair; surstyle long and tapering to slender point, with single tenaculum.

Antenna=1.34 mm (1.00-1.65), wing length=1.98 mm (1.47-2.27), width=0.84 mm (0.62-0.95).

♀. Similar to ♂. Genitalia as figured; subgenital plate with V-shaped notch in posterior border; pair of elongate, oblique pockets on inner face; dome-like plate on midline of inner face protruding cephalad, with 4 small setae; spermatheca reticulate.

Antenna=1.27 mm (1.05-1.55), wing length=2.10 mm (1.70-2.92), width=0.93 mm (0.72-1.17).

Holotype ♂ (BISHOP 7320): NE New Guinea, Wau, 1200 m, 19.XII.1961, light trap, L. & S. Quate; allotype ♀ (BISHOP): NW New Guinea, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 3 ♂♂, same data as holotype, but 13-17.XII.1961, Malaise trap, J. Sedlacek; 3 ♂♂, 10 ♀♀, 15 km W of Lae, 17-26.IV.1965, Y.M. Huang & W.A. Steffan; 1 ♀, 10 km NW of Lae, 9.VII.1957, D.E. Hardy; 1 ♂, Kaindi, 2050 m, 17.V.1959, 6th Archb. Exped; 2 ♂♂, 1 ♀, Kimi Creek, NE slopes of Mt Michael, 1980 m, 29.VIII.1959, 6th Archb. Exped; 21 ♂♂, 13 ♀♀, Purosa Camp, Okapa area, 1950 m, 30.IX.1959, 6th Archb. Exped; 1 ♂, 1 ♀, Kratke Mts, Arau, 1400 m, 20.X.1959, 6th Archb. Exped; 1 ♀, Nondugl, 1600 m, 9.VII.1955, light trap, J.L. Gressitt; 2 ♂♂, Karimui, S of Goroka, 1000 m, 2.VI.1961, light trap Gressitt; 3 ♀♀, Sepik Distr., Dreikikir, 400 m, 25.VI.1961, Malaise trap, J.L. & M. Gressitt; 2 ♂♂, NE NG, Adelbert Mts, Wanuma, 1000 m, 27.X.1958, light trap, Gressitt; 1 ♂, NW New Guinea, Hollandia-Binnen, 100 m, 24.XI.1958, light trap, Gressitt; 2 ♀♀, Archbold Lake, 760 m, 26.XI-3.XII.1961, Malaise trap, L. & S. Quate; 1 ♂, 1 ♀, Mulik R, 10 km W of Archbold L., 1050 m, 3-5.XII.1961, light trap, L. & S. Quate; 1 ♂, 1 ♀, same data as allotype. New Britain: 1 ♀, Gazelle Pen., Gaulim, 130 m, 28.X.1962, J. Sedlacek; 3 ♀♀, Gazelle Pen., Mt Sinewit, 900 m, 10.XI.1962, light trap, Sedlacek; 1 ♀, Gazelle Pen., Kerawat, 31.VIII.1955, light trap, Gressitt; 1 ♂, 1 ♀, W of Willaumez Pen., Linga Linga, 13.IV.1956, light trap, Gressitt.

145. *Philosepedon sessilis* Quate and Quate, new species Fig. 67a-d.

♂. Eyes separated by 1 or less facet diameter at upper part of eye bridge but wider on lower since median margins of eye bridges divergent anteriorly, interocular suture thick, projecting posteriorly; vertex higher than width of eye bridge, occiput protuberant and concave in center; frons covered with hair on anterior part and with narrow median band extending to center of eye bridge; ratio of palpal segments=5:5:4(5):5; labellum with several setae on apical border but without blunt teeth as in *Psychoda*. Antenna 15-segmented; scape and pedicel subequal; node of 1st flagellar segment pyriform and larger than following, following globular; terminal 2 segments reduced and separated; ascoids Y-shaped, both anterior blades little broader than stem. Wing veins of equal development; M_2 weakened at fork. Fore femur longer than tibia. Genitalia as figured; dististyle rather thick on basal 1/2 but tapering to slender apex, with number of non-deciduous hairs on basal 1/2; aedeagus fork-shaped, with 4 apical points, median pair slender and much longer than lateral pair; surstyle slender, with single tenaculum.

Antenna=0.99 mm (0.92-1.05), wing length=1.43 mm (1.27-1.60), width=0.57 mm (0.50-0.62).

♀. Similar to ♂. Genitalia as figured; subgenital plate much wider than long, weakly concave on apical margin; hemispherical, clear area on inner face at midline; spermatheca finely reticulate over all of surface.

Antenna=0.89 mm (0.80-0.97), wing length=1.57 mm (1.45-1.75), width=0.61 mm (0.55-0.70).

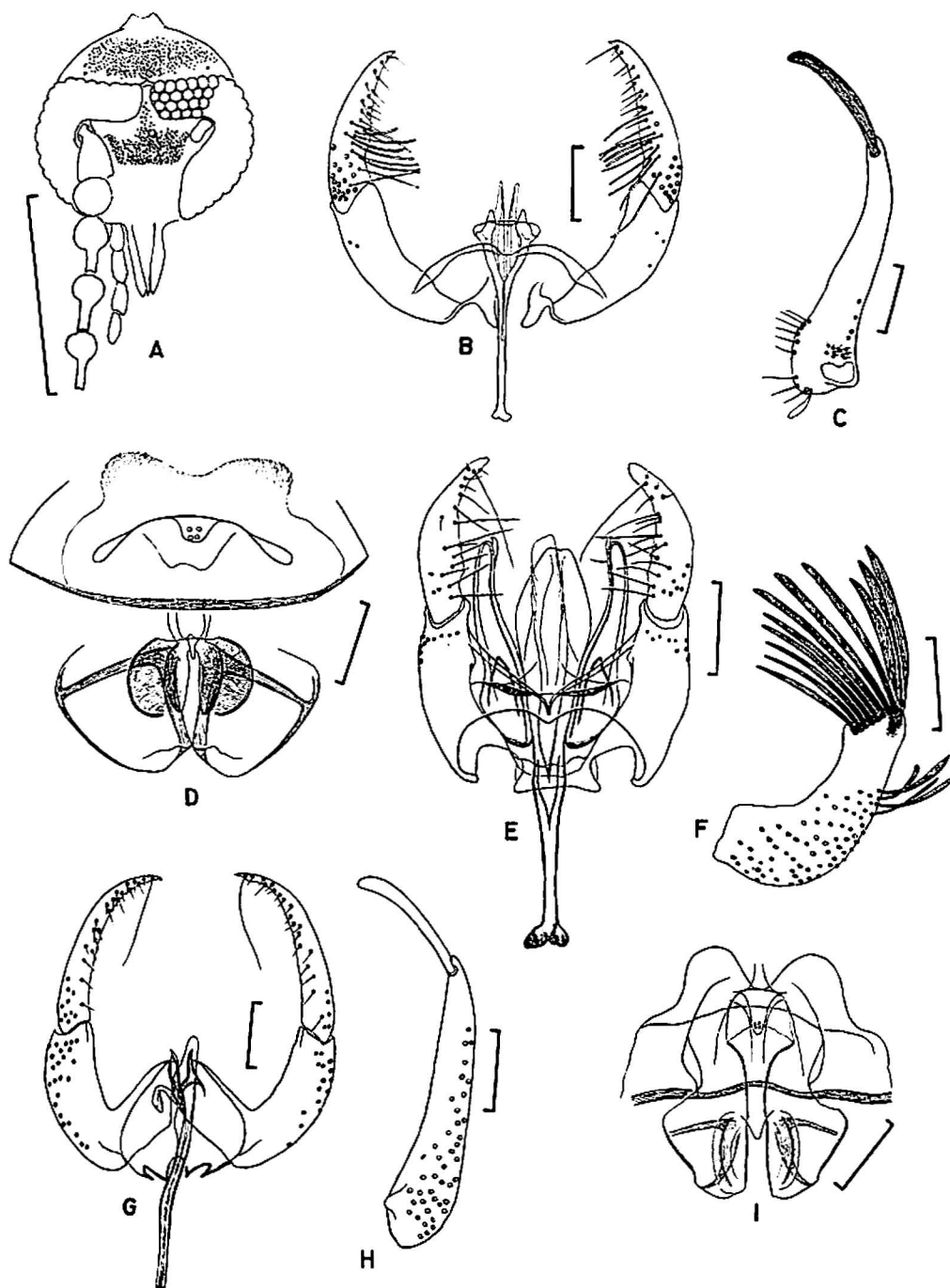


Fig. 67. a-d, *Philosepedon sessilis*: a, ♂ head; b, ♂ genitalia, dorsal; c, ♂ surstyle; d, ♀ genitalia. e-f, *Philosepedon forcipata*, ♂: e, genitalia, dorsal; f, surstyle. g-i, *Philosepedon setosa*: g, ♂ genitalia, dorsal; h, ♂ surstyle; i, ♀ genitalia. Scale lines of head=0.3 mm; others=0.05 mm.

Holotype ♂, allotype ♀ (BISHOP 7321): NW New Guinea, Bokondini, 1300 m, 5–11.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 62 ♂♂, 28 ♀♀, same data as types; 1 ♂, Swart Val., Karubaka, 1450 m, 12.XI.1958, light trap, J.L. Gressitt; 1 ♂, 2 ♀♀, Archbold L., 760 m, 26.XI–3.XII.1961, light trap, S. & L. Quate; 4 ♂♂, Sibil Val., 1245 m, 18.X–8.XI.1961, at light, S. & L. Quate; 4 ♂♂, 9 ♀♀, Vogelkop, Kebar Val., 550 m, 4–31.I.1962, light trap, S. & L. Quate; 1 ♂, NE New Guinea, 10 km NW of Lae, 9.VII.1957, D.E. Hardy; 1 ♂, 15 km W of Lae, 17.IV.1965, Malaise trap, W.A. Steffan.

Other specimens. Keravat, 3.IV.1956, light trap, Gressitt.

The above two species, *quadricuspis* and *sessilis*, have many features which appear in the genus *Psychoda*. However, the structure of the labellum appears to us most closely related to *Philosepedon* and therefore, these species are placed in that genus. To place them in *Psychoda* would necessitate a modification of the definition of *Psychoda* which we do not feel would be advisable. It does point up, though, that the classification of those species which are related to *Philosepedon* and *Psychoda* is difficult and this group of psychodids is in need of a thorough revision which might reveal more satisfactory characters than we presently know. Until this revision is made, it seems best to limit the species of *Psychoda* to those with the blunt teeth on the labellum and place others in *Philosepedon*, even though this makes that genus a collection of species which probably are not congeneric.

146. ***Philosepedon forcipata*** Quate and Quate, new species Fig. 67e–f.

♂. Eyes narrowly separated by less than 1 facet diameter, interocular suture with sharp, short spur on midline; vertex and width of eye bridge subequal, occiput not elevated but slightly depressed in center; frons largely covered with hairs and with slender median band extending to 1st row of facets; ratio of palpal segments=5:9:10:12; labellum moderately inflated and without setae on apical border. Antenna 15-segmented; scape and pedicel subequal; terminal 2 segments reduced and separated; ascoids apparently Y-shaped. Wing with veins equally developed; M_2 weakened at fork. Fore femur longer than tibia. Genitalia as figured; dististyle curved and tapering to slender point, with small digitiform process at about distal 1/4, with long preapical seta longer than other setae; aedeagus somewhat bulbous in center and with pair of forceps-like appendages on side; surstyle curved, rather thick throughout, with 8 acutely pointed tenacula in nearly straight row.

Antenna=0.97 mm, wing length=1.55 mm, width=0.60 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7322): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4–31.I.1962, light trap, S. & L. Quate.

147. ***Philosepedon setosa*** Quate and Quate, new species Fig. 67g–i.

♂. Eyes separated by 1–1.5 facet diameters, interocular suture straight, median margin of eyes convergent posteriorly; vertex on midline about 1.5× width of eye bridge; frons with broad band of hair extending posteriorly nearly to interocular suture; ratio of palpal segments=20:20:20:25; labellum apparently with 3 teeth and 1 spine. Antenna 15-segmented, flagellar segment 1 with pyriform node considerably larger than following nodes, terminal 2 segments subequal in size and separated; ascoids Y-shaped. Radial fork far distad of medial, forks complete but M_2 weakened at fork. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to acute apex and curved, with long seta near apex; aedeagus small, main shaft flanked by pair of slender, acute lobes; surstyle elongate and with long tenaculum.

Antenna=0.73–0.93 mm, wing length=1.17–1.52 mm, width=0.45–0.60 mm.

♀. Similar to ♂. Genitalia as figured; subgenital plate ending in 2 rounded lobes separated by V-shaped concavity; spermatheca small and lightly reticulate.

Antenna=0.75-0.82 mm, wing length=1.32-1.52 mm, width=0.47-0.62 mm.

Holotype ♂, allotype ♀ (BISHOP 7323): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI. 1961, light trap, S. & L. Quate. Paratype (BISHOP, USNM, BMNH, CSIRO): 10 ♂♂, 6 ♀♀, same data as types.

Genus *Threticus* Eaton

Quate, 1959, Ann. Ent. Soc. Amer. 52: 449.

Type-species. *Psychoda lucifuga* Walker, by subseq. design.

Range. Holarctic, Ethiopia, Oriental, Australasian Regions.

This genus is much like *Philosepedon*, but differs in having the antennal ascoids composed of a single, S-shaped rod in contrast to the Y-shaped structure of the latter. Formerly, the absence of blunt teeth on the labellum, the unbranched ascoids and symmetrical ♂ aedeagus, differentiated *Threticus* from *Psychoda*, but the following species bridges that gap in the possession of distinct labellar teeth. Since the teeth were regarded as the most important character of *Psychoda* and were relied on heavily in a classification of the Psychodini (Quate 1959), the finding of this species with characters both of *Threticus* and *Psychoda* raises the question if that classification is reliable. However, it seems best to retain the classification *in statu quo* until the psychodines of the world are more completely known and a broader base for a reclassification is available.

148. *Threticus fissiceps* Quate and Quate, new species

Fig. 68.

♂. Eyes separated by about 1/2 facet diameter, interocular suture inverted, Y-shaped with thick stem; vertex about 1.5 × width of eye bridge, with deeply indented, conspicuous, longitudinal sulcus on midline; frons with rectangular patch of hair on anterior 2/3, median band extending posteriorly

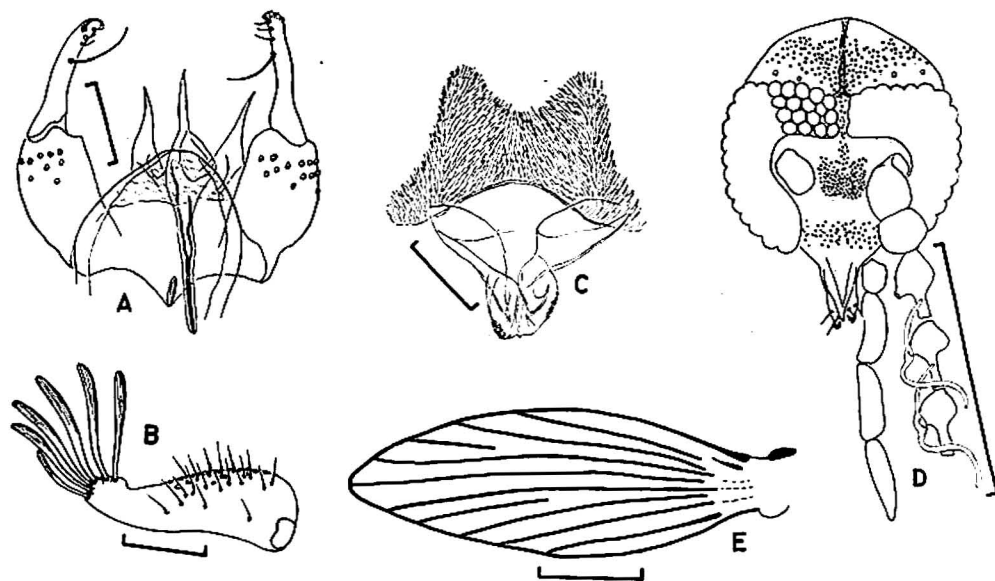


Fig. 68. *Threticus fissiceps*. a, ♂ genitalia; b, ♂ surstyle; c, ♀ genitalia; d, ♂ head; e, ♂ wing. Scale lines of head & wing=0.3 mm; others= 0.05 mm.

to suture; ratio of palpal segments=4:9:9:10; labellum as in *Psychoda*, with 4 distinct teeth and 2 spines; antenna 15-segmented, node of 1st flagellar segment considerably larger than following; segment 14 solidly fused to 13, 15 free; ascoids approximately S-shaped, with a single sinuous branch. Wing slender; forks incomplete, radial fork well distad of medial; R_5 ending in apex. Fore femur longer than tibia. Genitalia as figured; dististyle rather short, slender, with a number of long setae on distal 1/3, apex with serrated fringe on dorsoapical border; aedeagus symmetrical, 3-branched; paramere not evident; surstyle nearly straight, with 5 tenacula.

Antenna=0.94 mm, wing length=1.32 mm, width=0.45 mm.

♀. Similar to ♂; eyes separated by about 1 facet diameter, vertex with sulcus as in ♂. Genitalia as figured; subgenital plate short, sides nearly parallel, apical concavity hemispherical.

Antenna=0.75 mm, wing length=1.35 mm, (width indiscernible, wing shriveled).

Holotype ♂, allotype ♀ (BISHOP 7324): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, S. & L. Quate.

This is an anomalous species which clearly shows characters of both *Threticus* and *Psychoda*. The labellum with its distinct teeth and spines is as found in all species of *Psychoda*; the male and female genitalia and the antennal ascoids are as found in *Threticus*. It is difficult to decide on a placement for this species, but it is our opinion that it belongs to *Threticus*.

Genus *Psychoda* Latreille, 1796

Quate, 1959, Ann. Ent. Soc. Amer. 52: 450.

Type-species. *Tipula phalaenoides* Linnaeus, by subseq. desig.

Range. Cosmopolitan.

For separation of *Psychoda* from other genera, refer to previous generic discussions, particularly *Philosepedon* and *Threticus*.

KEY TO NEW GUINEA SPECIES OF PSYCHODA

1. Eyes contiguous on midline 2
Eyes clearly separated 3
- 2 (1). Anterior margin of eye bridge separated in V-shaped notch which extends to 2nd or 3rd row of facets; ♀ subgenital plate ending in small, Y-shaped piece; ♂ dististyle ending in slender, digitiform spur149. **adumbrata**
Anterior margin of eye bridge not indented or only with small notch not more than 1 facet row deep; ♀ subgenital plate large, with pair of densely setose, curved ridges on inner face150. **sibilica**
- 3 (1). Wing forks complete, i.e., bases of R_5 and M_2 present 4
Wing forks incomplete, bases of R_5 and M_2 absent, a noticeable distance from normal position of forks 74
- 4 (3). Palpus 2 & 3 small, distinctly shorter than 1, nearly ovoid; antenna 15-segmented, segment 14 smaller than 15 and not fused to 13, may appear as inflated internode between 13 & 15 5
Palpus 2 & 3 subequal to 1, if smaller antennal segment 14 not as above 7
- 5 (4). Frons with median band of hairs extending posteriorly to upper row of eye facets 6
Frons without median band of hairs, vertex hairs extend anteriorly between eyes; ♀ subgenital plate with straight, convergent sides, without genital digit153. **spicula**
- 6 (5). ♀ subgenital plate large and hemispherical; membranous part of spermatheca with short setae along median and cephalic margins; ♂ aedeagus simple, lateral shaft closely applied to main; paramere small and bilobed152. **plutea**
♀ subgenital plate Y-shaped, small; spermatheca elongate, cephalic part membranous and with long setae along median and cephalic margins; ♂ unknown151. **furcillata**

- 7 (4). Frons with single patch of hairs and median band..... 8
 Frons with 2, separated patches of hair and without median band; large, broad winged species; ♂ with horn-like projection on frons and large patagia on prothorax161. **rhinocera**
- 8 (7). Antenna 16-segmented 9
 Antenna 15- or 14-segmented 38
- 9 (8). Radial and medial forks on same level; wing without spots at vein tips 10
 Radial fork clearly distad of medial; if near same level, wing with spots at vein tips 11
- 10 (9). Large species with broad, unmarked wing, wing length 1.7-2.3 mm; ♂ with protuberant frons densely covered with hair; ♀ subgenital plate without genital digit, spermatheca strongly crenulate on lateral border160. **mirabilis**
 Smaller species with banded wing, wing length 1.2-1.7 mm; ♂ frons normal, not protuberant; ♀ subgenital plate with digit, ovoid setose structure on inner face of digit, spermatheca setose on mesal and cephalic margins.....159. **wilsoni**
- 11 (9). Vertex small, measured on midline from upper margin of eyes considerably shorter than width of eye bridge; terminal antennal segment smaller than preceding 2, subterminal 14 & 15 often partly fused 12
 Vertex larger, about as high as or higher than width of bridge; terminal 3 segments equal in size and separated, except *gemella*, which has 14 & 15 solidly fused..... 25
- 12 (11). Median band of hairs of frons extending posteriorly between eyes consisting of several rows of hairs 13
 Band of hairs between frons a single row, at least at level of upper 3 rows of facets; ♀ subgenital plate consisting of emarginate, quadrate piece arising from wider base, inner face with small, bilobed structure cephalad of slender digit; ♂ (?) surstyle very slender, but not unusually long162. **monticola**
- 13 (12). Females 14
 Males 22
- 14 (13). Eyes separated by about 1 facet diameter 15
 Eyes separated by 2 facet diameters; small, yellowish species; subgenital plate Y-shaped with thick stem, base of plate with spatulate hairs163. **alveata**
- 15 (14). Without rosette-like structures on inner face of subgenital plate 16
 With pair of large, rosette-like structures on inner face of plate164. **rosetta**
- 16 (15). Subgenital plate not elongate, about as wide as high 17
 Subgenital plate elongate, higher than wide; pair of dark, comma-like structures at base of digit165. **harrisi**
- 17 (16). Sides of subgenital plate convergent posteriorly or parallel 18
 Sides of plate divergent posteriorly 21
- 18 (17). Terminal 3 antennal segments separated; genital digit not unusually long 19
 Segments 13, 14, 15 fused; genital digit long and slender, extends beyond apical border of plate by about 1/3 its length166. **macispina**
- 19 (18). Base of subgenital plate little wider than apex 20
 Base of plate expanded, much wider than apex; crenulate area of midline of inner face near base167. **crenula**
- 20 (19). Inner face of subgenital plate with central patch of setae arranged in regular, spray-like pattern (usually visible only under high magnification)177. **spinacia** (part)
 Plate without setal ornamentation at base of digit176. **aponesos** (part)
- 21 (17). Inner face of subgenital plate with shield-like structure with spiny or serrate margins; apex of plate not Y-shaped168. **spinipeltata**
 Inner face of plate without unusual ornamentation; apex of plate Y-shaped, short with thick stem169. **dissidens**

- 22 (13). Aedeagus ending in sharply recurved, beak-like apex.....23
 Aedeagus straight or curved at apex, but not recurved.....24
- 23 (22). Paramere spinose over entire surface; accessory spine of dististyle very close to base;
 sternite 9 serrate or rugose on caudal margin165. **harrisi**
 Paramere smooth, without setae; accessory setae of dististyle removed from base by
 several times width of dististyle; sternite 9 smooth on caudal margin166. **macispina**
- 24 (22). Surstyle unusually long; aedeagus ending in single, gentle curve168. **spinipeltata**
 Surstyle shorter than usual in *Psychoda*; main shaft of aedeagus straight, lateral shaft
 slightly sinuous164. **rosetta**
- 25 (11). Frons with median band of hairs extending posteriorly to at least upper 1/2 of eye bridge.....26
 Frons with median band short, extending only to lower margin of eye bridge; vertex
 hairs extending anteriorly to 3rd row of facets; ♀ subgenital plate with apex small,
 heart-shaped; ♂ dististyle with short, thick projection at base173. **cetreta**
- 26 (25). Terminal 3 antennal segments separated; wings not unusually narrow 27
 Antennal segments 14 & 15 closely fused together and to 13; eye bridge small and vertex
 unusually high; membranous part of spermatheca with cephalic margin spinose;
 small, yellowish species with narrow, lanceolate wings170. **gemella**
- 27 (26). Palpus short, extending only to antenna 5 or only to node of 6; antenna 3 with node
 larger and more pyriform than others 28
 Palpus longer, extending to antenna 7 or beyond 29
- 28 (27). Eyes widely separated by about 2 facet diameters in ♂ and 3 in ♀; ♀ subgenital plate
 broad with broad, shallow apical concavity, spermathecal ridge long and surrounded
 by membranous part bearing numerous, long spines on cephalic margin; ♂ aedeagus
 simple, straight, tubular, sternite 9 broad, angulate at apicolateral angles
 and weakly trilobed171. **kalabanica**
 Eyes separated by not more than 1 1/2 facet diameters; ♀ subgenital plate Y-shaped,
 spermatheca strongly crenulate on lateral margins, membranous part without spines;
 ♂ aedeagus complex, apex of main shaft bifid; fore femur and tibia subequal.....
172. **paraguadens**
- 29 (27). Females 30
 Males 34
- 30 (29). Subgenital plate with deep, V- or U-shaped indentation at apex 31
 Subgenital plate with shallow, rounded apical concavity 32
- 31 (30). Basal margin of subgenital plate deeply indented at center174. **sectiga**
 Basal margin of plate straight178. **echinata**
- 32 (30). Subgenital plate with straight sides, apical concavity normal 33
 Subgenital plate with rounded sides, apical concavity with median projection...175. **tumerosa**
- 33 (32). Inner face of subgenital plate with central patch of setae arranged in regular, spray-
 like pattern (usually visible only under high magnification)177. **spinacia**
 Plate without setal ornamentation on inner face, except pair of setose lobes at base
 of digit176. **aponesos**
- 34 (29). Dististyle suddenly constricted near basal 1/3 or center, so distal part is markedly
 more slender than base; surstyle stocky 35
 Dististyle evenly tapering from base to apex; surstyle of usual, elongate *Psychoda*
 shape176. **aponesos**
- 35 (34). Paramere rounded at apex36
 Paramere truncate, asymmetrical; lateral shaft of aedeagus extends to tip of main
 shaft175. **tumerosa**
- 36 (35). Lateral shaft of aedeagus short, not extending to tip of main shaft37
 Lateral shaft of aedeagus extending to tip of main shaft, basal part of paramere bilobed
177. **spinacia**

- 37 (36). Lateral shaft of aedeagus curved and adjacent to shaft174. **sectiga**
 Lateral shaft straight and separated from main shaft178. **echinata**
- 38 (8). Antenna 15-segmented 39
 Antenna 14-segmented; ♀ subgenital plate with structure like horse collar on inner
 face; ♂ dististyle with digitiform protuberance near center. New Britain...200. **yapensis**
- 39 (38). Terminal 2, reduced antennal segments of equal size and separated.....40
 Terminal 2, reduced segments of unequal size..... 42
- 40 (39). Palpus 1 no wider than and usually about same length as 2..... 41
 Palpus 1 inflated, wider and shorter than 2; small species; eyes separated by 2 facet
 diameters; subgenital plate with pair of rounded lobes on inner face near digit...179. **vesca**
- 41 (40). Eyes separated by at least 1 facet diameter; ♀ subgenital plate quadrate with broad apical
 concavity and long, slender digit; ♂ aedeagus expanded apically into spatulate
 appendage bearing 3, upcurved pointed projections181. **hastata**
 Eyes narrowly separated in both sexes by less than 1 facet diameter; apex of ♀ subgenital
 plate somewhat cordate; ♂ aedeagus simple, unipartite and paramere strongly
 bilobed180. **concinna**
- 42 (39). Antenna 14 smaller than 15, often fused to 13 or so small as to be nearly indistinguish-
 able; wings unmarked 43
 Antenna 15 smaller than 14; veins with spots at tips.....67
- 43 (42). Height of vertex on midline above posterior border of eye bridge about equal to or
 less than width of eye bridge44
 Height of vertex on midline 2 × width of eye bridge, bridge small; ♀ subgenital plate
 with sides convergent posteriorly; ♂ aedeagus unipartite, distal part beyond
 foramen broad and striate, giving aedeagus appearance of trowel183. **oculifera**
- 44 (43). Females 45
 Males 59
- 45 (44). Subgenital plate constricted at base or center, so apical part arises from a stem 46
 Subgenital plate not constricted, sides parallel or convergent posteriorly 48
- 46 (45). Subgenital plate elongate, fishtail- or Y-shaped 47
 Subgenital plate quadrate beyond short stem184. **pala**
- 47 (46). Slender stem of subgenital plate flanked by conspicuous, irregularly bowed, setose
 ridges on inner face185. **adcerces**
 Stem of plate crossed by membranous flap at base of digit, without flanking ridges
186. **paradcerces**
- 48 (45). Subgenital plate without rosette-like structures on inner face 49
 Plate with pair of rosette-like structures on inner face187. **savaiensis**
- 49 (48). Antennal ascoids Y-shaped 50
 Antennal ascoids 4-branched. *quadrifilis* complex 55
- 50 (49). Spermatheca with small, dark, striated lobe on anterolateral margin 51
 Spermatheca without lobe 52
- 51 (50). Eyes separated by 1 facet diameter; large species, wing length about 2 mm156. **ochra**
 Eyes widely separated by 3 facet diameters; smaller species, wing length 1.2 mm.....
154. **paraloba**
- 52 (50). Spermatheca with numerous setae 53
 Spermatheca bare, without setae 54
- 53 (52). Spermatheca hemispherical; inner face of subgenital plate with pair of setose lobes at
 base of digit157. **albescens**
 Spermatheca elongate; plate without lobes on inner face.....193. **nolana**
- 54 (53). Subgenital plate short, wider than long; truncate with divergent sides.....155. **remata**
 Subgenital plate longer than wide, apex concave.....192. **quadrata**

- 55 (49). Sides of subgenital plate convergent basally and parallel distally..... 56
Sides of plate convergent over entire length..... 57
- 56 (55). Spermatheca large, fig. 83a189. **quadropsis**
Spermatheca small, fig. 82e188. **quadrilosa**
- 57 (55). Apical lobes of plate rounded, fringe on inner face of plate before digit with striated
or setose border 58
Apical lobes of plate acutely angled, pointed; fringe on inner face of plate with plain
border190. **quadricornis**
- 58 (57). Fringe on inner face of plate slopes anteriorly from digit, does not attain margin
.....191. **guamensis**
Fringe on inner face of plate slopes posteriorly from digit, extends beyond lateral margin
of plate, fig. 81f.....182. **serpentina**
- 59 (44). Aedeagus simple, composed only of main shaft 60
Aedeagus bipartite, composed of main and lateral shafts 62
- 60 (59). Paramere rounded or truncate apically 61
Paramere bilobed apically156. **ochra**
- 61 (60). Paramere truncate; dististyle shorter than basistyle157. **albescens**
Paramere rounded; dististyle longer than basistyle158. **occulta**
- 62 (59). Dististyle cleft or with protuberant process 63
Dististyle simple 64
- 63 (62). Dististyle cleft near apex and projection extends nearly to apex of style; lateral shaft of
aedeagus straight, sword-like189. **quadropsis**
Dististyle with short, rounded protuberance at about center; lateral shaft slender and
with sharp preapical curve188. **quadrilosa**
- 64 (62). Lateral shaft of aedeagus straight or with single curve 65
Lateral shaft strongly curved at several places to give sinuous, twisted appearance;
paramere composed of pair of slender, setose lobes.....182. **serpentina**
- 65 (64). Lateral shaft of aedeagus extends to tip of main shaft; dististyle longer than basistyle.....66
Lateral shaft of aedeagus very short and straight; dististyle shorter than basistyle.....
.....187. **savaliensis**
- 66 (65). Lobes of paramere with short, inconspicuous setae; lateral shaft of aedeagus curves away
from main shaft at base191. **guamensis**
Lobes of paramere with long, black, conspicuous setae; lateral shaft of aedeagus curves
towards main shaft at base.....186. **paraderces**
- 67 (42). Medial wing fork basad of radial by at least width of cell R_3 at point of bifurcation..... 68
Medial fork nearly on same level as radial..... 69
- 68 (67). ♀ subgenital plate broad, not V-shaped, with genital digit, basal margin with conspic-
uous notch at midline; lateral shaft of ♂ aedeagus short and slender, ends well
before tip of main shaft, margin of 9th sternite smooth199. **platilobata**
♀ subgenital plate V-shaped, without genital digit; lateral shaft of ♂ aedeagus ex-
tends to tip of main shaft, margin of 9th sternite slightly serrate196. **alternata**
- 69 (67). Females 70
Males 73
- 70 (69). Subgenital plate bilobed 71
Subgenital plate consists only of single, straight, rod-like piece rounded at apex.....
.....195. **pseudalternata**
- 71 (70). Lobes of subgenital plate acute apically 72
Lobes of plate rounded apically194. **alia**
- 72 (71). Lobes of plate slender, each thinner than gap between them197. **acanthostyla**
Lobes of plate broader, wider than gap between them8. **vagabunda**

- 73 (69). Dististyle slender, tapering to acute, simple apex; lateral shaft of aedeagus very long, curves inwards beyond tip of main shaft194. **alia**
 Dististyle short, rounded apically, distal part enlarged and bearing number of spines on inner face; lateral shaft of aedeagus very short, straight, acutely pointed.....
197. **acanthostyla**
- Wing Forks Incomplete
- 74 (3). Antenna 16-segmented 75
 Antenna 14- or 15-segmented 78
- 75 (74). Eyes separated by 1 or less facet diameter 76
 Eyes separated by 1.5-2 facet diameters; vertex nearly as high as width of eye bridge; antennal segment 14 and 15 fused; ♀ subgenital plate Y-shaped arising from broad base, base lined with long, spatulate hairs on caudal margin; ♂ paramere large, weakly bilobed, setose201. **caudata**
- 76 (75). ♀ subgenital plate with sides divergent posteriorly; ♂ aedeagus bipartite with prominent lateral shaft 77
 ♀ subgenital plate with sides convergent posteriorly, plate truncated cone-shaped with apical concavity; ♂ aedeagus simple, without lateral shaft, base before foramen very short202. **rhipsalis**
- 77 (76). Hind femur usually longer than tibia; ♀ subgenital plate consisting of heart-shaped lobe arising from base with expanded sides; ♂ lateral shaft with angular curvature203. **makati**
 Hind femur usually shorter than tibia; ♀ subgenital plate consisting of divergent-sided lobe arising from small base; ♂ lateral shaft straight.....204. **ablucens**
- 78 (74). Antenna 15-segmented 79
 Antenna 14-segmented111
- 79 (78). Eye bridge occupying most of front, height of vertex on midline less than width of bridge ... 80
 Eye bridge small, height of vertex on midline more than width of bridge104
- 80 (79). Females 81
 Males 95
- 81 (80). Eyes separated by 1 facet diameter or less 82
 Eyes separated by 1.5 facet diameters or more 92
- 82 (81). Subgenital plate with pair of prominent, circular rosette-like or setose structures on inner face 83
 Subgenital plate without circular ornamentations on inner face..... 85
- 83 (82). Sides of subgenital plate nearly straight 84
 Sides of plate strongly curved outward beyond center and lobes at side of apical concavity truncate; larger species, wing length 1.40-1.70 mm205. **bitrunculens**
- 84 (83). Rosette-like structures on inner face of subgenital plate separated by distinct clear area with concave caudal margin, plate wider than high.....206. **brassi**
 Rosette-like structures contiguous, plate higher than wide.....207. **floropsis**
- 85 (82). Subgenital plate without slender setose lobes on inner face..... 86
 Subgenital plate with slender, setose lobe on inner face on either side of genital digit; ventral plate of spermatheca ending caudally in pair of sharp, sclerotized points ...208. **duaspica**
- 86 (85). Basal margin of subgenital plate markedly concave or with deep cleft at midline..... 87
 Basal margin of plate straight 88
- 87 (86). Sides of plate concave, distally curving outward to form pair of large lobes on each side of apical concavity; prominent setose area at base of digit.....209. **mediocris**
 Sides of plate sloping inwards; pair of setose areas flanking digit210. **absidata**
- 88 (86). Inner face of plate without cone-shaped structure 89

- Inner face of plate with truncated, cone-shaped structure with its apex at level of base of digit211. **innotabilis**
- 89 (88). Subgenital plate wider than high 90
- Plate elongate, higher than broad 91
- 90 (89). Sides of plate convergent, sloping inwards over entire length; lobe at base of digit prominent, densely setose; spermatheca not setose; dark species.....212. **pinguicula**
- Sides of plate parallel basally, convergent only at level of apical concavity; lobe at base of digit small, lightly setose; spermatheca setose; pale colored species...213. **annectans**
- 91 (89). Inner face of plate with bilobed, setose flap at level of base of digit, without ornamentation at base215. **lamina**
- Plate without flap on inner face, pair of elongate, ovoid ornamentations at base of plate217. **pacilens**
- 92 (81). Basal margin of subgenital plate straight or weakly concave; sides of plate divergent over distal part 93
- Basal margin of plate strongly concave; sides of plate parallel over distal part; concave, setose ridge at base of digit.....218. **sphelata**
- 93 (92). Subgenital plate without striated areas, Y-shaped..... 94
- Subgenital plate with striated area on inner face on either side of midline; apex heart-shaped.....219. **blandita**
- 94 (93). Plate with dark area on midline at base; larger species, wing length 1.0–1.7 mm...214. **erratilis**
- Plate without dark area on midline; smaller species, wing length about 1.0 mm...216. **pellucida**
- 95 (80). Eyes separated by 1 facet diameter or less 96
- Eyes separated by 1.5–2 facet diameters; paramere quadrate, with band of setae along each side218. **sphelata**
- 96 (95). Paramere bilobed 97
- Paramere unilobed.....100
- 97 (96). Paramere strongly bilobed, lobes setose 98
- Paramere weakly bilobed, bare 99
- 98 (97). Lobes of paramere short, each lobe about as long as wide215. **lamina**
- Lobes longer, each lobe longer than wide214. **erratilis**
- 99 (97). Dististyle longer than basistyle212. **pinguicula**
- Dististyle shorter than basistyle216. **pellucida**
- 100 (96). Paramere conical, ending in acute apex closely applied to aedeagus101
- Paramere blunt at apex103
- 101(100). Paramere setose at base or over entire length102
- Paramere bare; dististyle enlarged at base207. **floropsis**
- 102(101). Paramere setose over entire length; dististyle not enlarged basally, gently tapering to slender apex209. **mediocris**
- Paramere setose only at base; dististyle enlarged basally, suddenly narrowed at basal 1/3206. **brassi**
- 103(100). Sides of paramere convergent, paramere extends nearly to tip of aedeagus; surstyle very long and slender.....211. **innotabilis**
- Sides of paramere parallel, 1/4 length of aedeagus extending beyond paramere; surstyle not unusually long205. **bitrunculens**
- 104 (79). Females105
- Males109
- 105(104). Subgenital plate ending in pair of lobes separated by semicircular concavity, not Y-shaped.....106
- Subgenital plate Y-shaped107
- 106(105). Sides of plate before apical lobes distinct; inner face with pair of separated, grandiose lobes projecting cephalad.....220. **parsivena**

- Sides of plate before apical lobes indistinct; inner face with bilobed, setose, plaque-like structure, lobes projecting caudad; spermatheca more heavily sclerotized than usual221. **bojata**
- 107(105). Stem of Y-shaped subgenital plate slender and as long as branches.....108
Stem of plate short and broad, base of plate before stem covered with short, spatulate hairs222. **barbigera**
- 108(107). Genital digit extending to or beyond caudal margin of subgenital plate; membranous flap on inner face of plate before digit wrinkled223. **alabangensis**
Genital digit not extending to caudal margin of plate; flap not wrinkled224. **gracicaulis**
- 109(104). Aedeagus straight, without a distinct curvature; paramere bilobed110
Aedeagus with a distinct, angulate curvature or twist about midway between foramen and apex; paramere unilobed223. **alabangensis**
- 110(109). Paramere straight-sided, lobes angulate and separated by wide concavity; dististyle short, little longer than basistyle220. **parsivena**
Sides of paramere indistinct, lobes semicircular, close together; dististyle about 2× basistyle221. **bojata** (?)
- 111 (78). Smaller species, wing length less than 1.5 mm; mid femur and tibia subequal in length112
Larger species, wing length greater than 1.5 mm; mid femur shorter than tibia (45:49); ♀ subgenital plate broad, without usual apical lobes, spermatheca elongate; ♂ unknown.....225. **spectabilis**
- 112(111). Eyes separated by 1 or less facet diameter (♂ unknown)113
Eyes separated by 1.5–2 facet diameters in ♀, 1 in ♂; apical part of ♀ subgenital plate Y-shaped with wide stem; ♂ aedeagus with small, C-shaped lateral shaft, dististyle moderately slender and with long spine near center226. **exigua**
- 113(112). ♀ subgenital plate with sloping, convergent sides; inner face of plate largely covered by semicircular setose area228. **exilis**
Subgenital plate composed of narrow base and arcuate apical part, without large, setose area.....227. **debilis**
149. **Psychoda adumbrata** Satchell, 1953, Proc. R. Ent. Soc. Lond. (B) 22: 181.—Quate, 1959, Ins. Micronesia (BISHOP Mus.) 12(4): 472. Fig. 69a–d.
DISTRIBUTION. Mariana Is., Caroline Is., Samoa, New Guinea.
NW NEW GUINEA: Vogelkop, Kebar Val., 550 m, 4–31.I.1962, light trap, L. & S. Quate, 5♂♂, 7 ♀♀; Bokondini, 1300 m, 16–23.XI.1961, light trap, L. & S. Quate, 1 ♀; Swart Val., 1900 m, 19.XI.1958, light trap, J.L. Gressitt, 1 ♂; Archbold L., 760 m, 26.XI–3.XII.1961, L. & S. Quate, 5 ♂♂, 5 ♀♀; Mulik R., 10 km W of Archbold L., 3–5.XII.1961, light trap, L. & S. Quate, 1 ♀; NW NG, Sibil Val., 1245 m, 18.X–8.XI.1961, Malaise trap, L. & S. Quate, 3 ♂♂, 1 ♀.
NE NEW GUINEA: Wau, 2.VI.1965, W.A. Steffan, 1 ♀; Wau, 8.XII.1961, L. & S. Quate, 1 ♀; Wampit Riv. Val., 75 km from Lae, 670 m, 5.V.1959, 6th Archb. Exped, 2 ♀♀; Lae-Bulolo Rd, 37 km W of Lae, 100 m, 26.IV.1959, 6th Archb. Exped, 1 ♀; NE slopes of Mt Michael, Kimi Creek camp, 1980 m, 27.VIII.1959, 6th Archb. Exped, 1 ♀.

This widespread, Pacific species is easily recognized by the contiguous eyes and female genitalia with its small, Y-shaped subgenital plate and the male genitalia with the malformed dististyle ending in a claw-like apex.

150. **Psychoda sibilica** Quate and Quate, new species Fig. 69e–j.

♀. Eyes contiguous, eye bridges in contact over entire median surface, sometimes separated by a smaller notch only as deep as 1 row of facets; vertex very small, much shorter than width of eye bridge; frons largely covered with hairs, with triangular projection on midline extending to lower

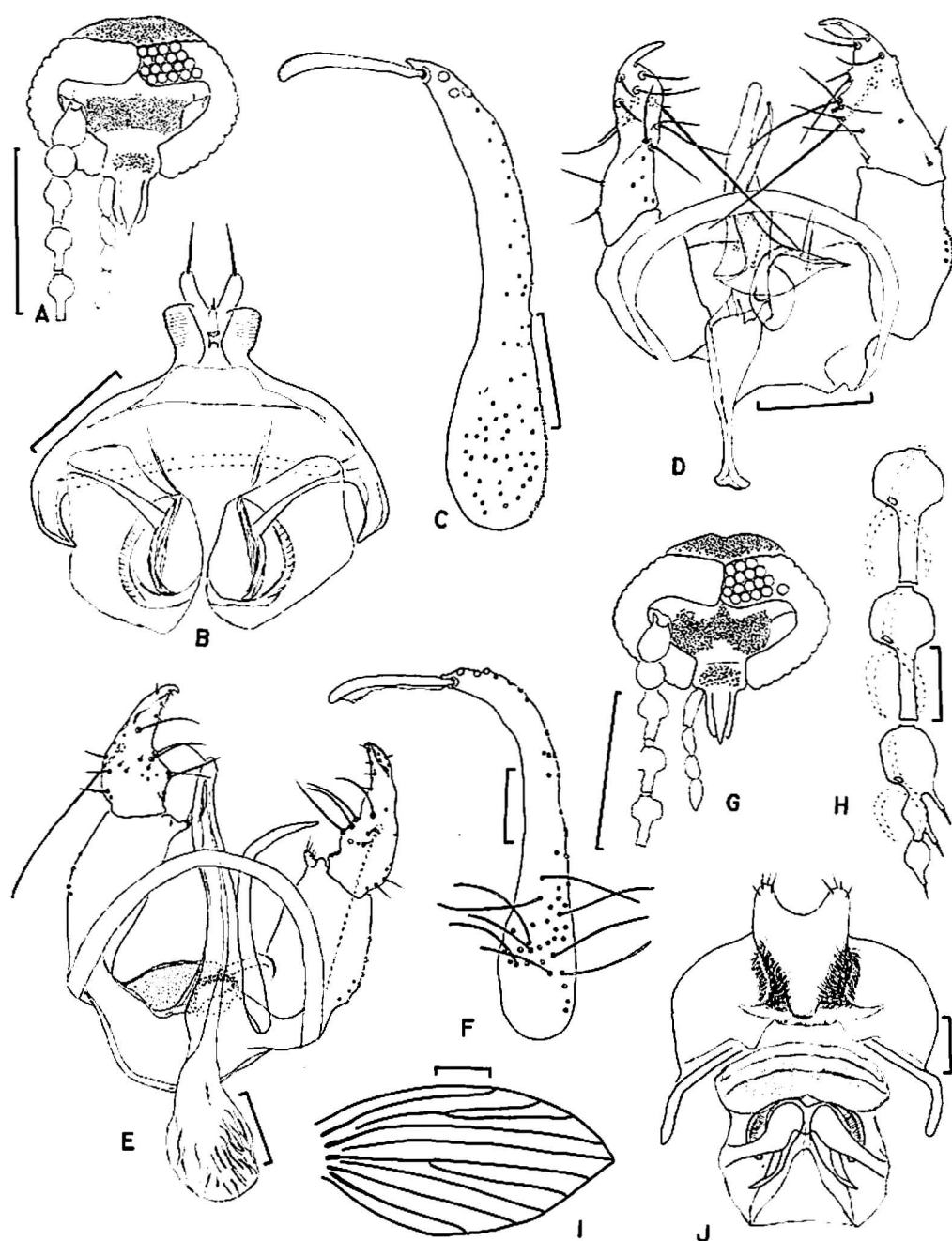


Fig. 69. a-d, *Psychoda adumbrata*: a, ♀ head; b, ♀ genitalia; c, ♂ surstyle; d, ♂ genitalia, dorsal. e-j, *Psychoda sibilica*: e, ♂ genitalia, dorsal; f, ♂ surstyle; g, ♀ head; h, ♀ antenna tip; i, ♀ wing; j, ♀ genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

edge of eyes; palpus with segment 1 larger than remaining segments, ratio of palpal segments=30:20:20:25. Antenna 15-segmented, terminal 2 segments very small, segment 14 bare and lighter in color than 15, separated from 13 and 15, 13 and 14 with preapical spine on long pedicel; ascoids Y-shaped. Wing banded with brown bars, 1st bar near base, 2nd at level of medial fork, 3rd at level of M_4 apex, and 4th near tip; forks complete, radial fork little distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate somewhat rectangular with apical concavity, pair of densely setose, curved ridges on inner face.

Antenna=1.17-(1.30) mm, wing length=1.85-2.07 mm, width=0.82-0.92 mm.

♂. Similar to ♀. Genitalia as illustrated; dististyle swollen basally with small protuberance on mesal face, slender and a little curved distally, with long accessory seta a little before center; lateral shaft of aedeagus slender and curving outwardly, shorter than main shaft; surstyle slender and curved apically.

Antenna=1.23-1.34 mm, wing length=1.75-1.87 mm, width=0.77-0.80 mm.

Holotype ♀ (BISHOP 7325): NW New Guinea, Kebar Val., 4-31.I.1962, Malaise trap, L. & S. Quate; allotype ♂ (BISHOP): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM): 1 ♂, 2 ♀♀, same data as allotype; 1 ♀, Archbold L. 26.XI-3.XII.1961, Malaise trap, L. & S. Quate.

Other specimens. NE New Guinea, Wau, 31.III.1965, light trap, W.A. Steffan, 1 ♀; Papua, Murua, 17-22.XII.1964, Malaise trap, Steffan, 1 ♀.

The contiguous eyes and elongate 1st palpal segment indicates a close relationship to *adumbrata*. These two species, however, are easily separated by characters of the male and female genitalia, which differ in conspicuous features as shown in the illustrations.

151. ***Psychoda furcillata*** Quate and Quate, new species Fig. 70i-l.

♀. Eyes separated by 1/2-1 facet diameter, interocular suture absent; vertex shorter than width of eye bridge; frons with slender, median band of hairs extending posteriorly to upper row of facets; palpus with segment 1 longer than others, ratio of palpal segments=26:18:18:25. Antenna 15-segmented, segment 14 small but not fused to 13 or 15, 13 and 14 with preapical setae on pedicel; ascoids Y-shaped. Wing forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate small and Y-shaped; spermatheca elongate and complex, with numerous, long spines on median and cephalic surfaces.

Antenna=0.82-1.12 mm, wing length=1.25-1.87 mm, width=0.52-0.87 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7326): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. PARATYPES (Bishop, USNM, BMNH, CSIRO): 7 ♀♀, same data as type; 1 ♀, Bokondini, 16-23.XI.1961, L. & S. Quate; 1 ♀, Sibil Val., 18.X-8.XI.1961, L. & S. Quate; 2 ♀♀, NE New Guinea, Wau, 31.III-2.IV.1965, light trap, W.A. Steffan.

The female genitalia of this species resembles that of *adumbrata* but the two species differ markedly in that the eyes of *adumbrata* are contiguous and in *furcillata* they are separated. These two species, however, probably have originated from a common ancestor.

152. ***Psychoda plutea*** Quate and Quate, new species Fig. 70a-e.

♀. Eyes separated by less than 1/2 facet diameter, interocular suture absent; vertex very small and much shorter than width of eye bridge; frons with slender median band extending to upper row of facets; palpus with segment 1 longer than 2 and 3, ratio of segments=30:20:20:32. Antenna 15-segmented, 14 small but distinct and separated from 13 and 15, 13 and 14 with preapical setae on pedicels; ascoids Y-shaped. Wing forks complete, radial fork well distad of medial. Fore femur

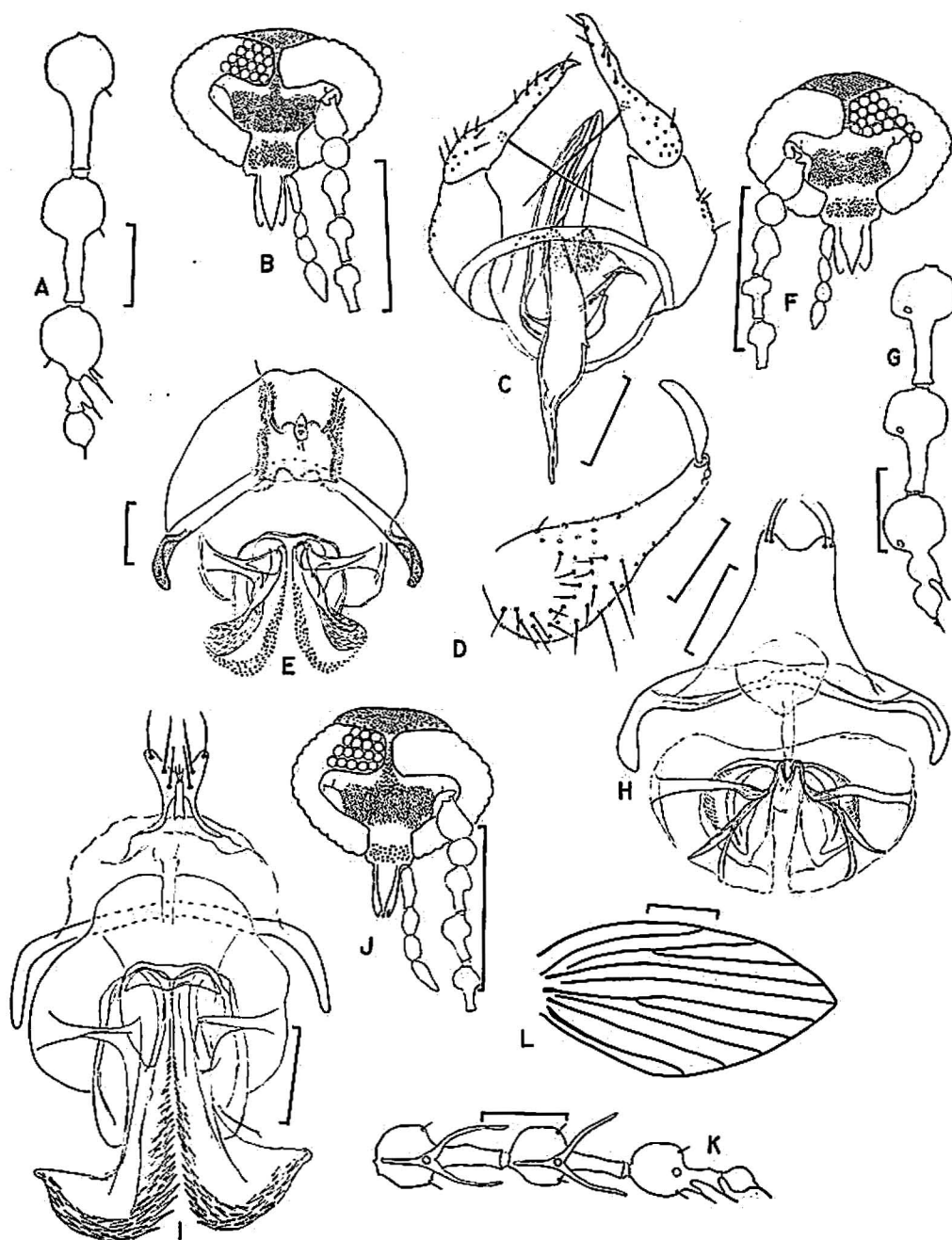


Fig. 70. a-e, *Psychoda plutea*: a, ♀ antenna tip; b, ♀ head; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♀ genitalia. f-h, *Psychoda spicula*, ♀: f, head; g, antenna tip; h, genitalia. i-l, *Psychoda furcillata*, ♀: i, genitalia; j, head; k, antenna tip; l, wing. Scale lines of heads & wing = 0.3 mm; others = 0.05 mm.

longer than tibia. Genitalia as figured; subgenital plate hemispherical with small, shallow apical concavity, lyre-shaped structure on midline from the center of which arises genital digit; spermatheca elongate and with spines on medial and cephalic borders.

Antenna=0.77-1.25 mm, wing length=1.22-1.97 mm, width=0.50-0.87 mm.

♂. Similar to ♀. Genitalia as figured; dististyle inflated basally and ending in acute, curved apex; aedeagus simple and with lateral shaft closely applied to main one; paramere small, setose, and bilobed; surstyle inflated basally and slender apically.

Antenna=0.76-1.32 mm, wing length=1.17-1.90 mm, width=0.47-0.82 mm.

Holotype ♀, allotype ♂ (BISHOP 7327): NW New Guinea, Sibil Val., 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 10 ♀♀, 17 ♂♂, same data as types.

153. ***Psychoda spicula*** Quate and Quate, new species Fig. 70f-h.

♀. Eyes separated by less than 1 facet diameter, interocular suture absent; vertex small, much narrower than width of eye bridge; frons without median band but hair patch on vertex extends anteriorly between eyes nearly to lower margin; palpus with segment 1 longer than 2 and 3, which are subglobular, ratio of segments=20:5:13:20; labellum with 3 teeth and 2 spines. Antenna 15-segmented, terminal 2 segments subequal in size and separated; ascoids indistinct but apparently Y-shaped. Wing forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate simple, sides straight and convergent posteriorly, apex shallowly concave, without apparent genital digit.

Antenna=0.94 mm, wing length=1.40-1.47 mm, width=0.57 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7328): NW New Guinea, Sibil Val., 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratype (BISHOP): same data as type.

154. ***Psychoda paraloba*** Quate and Quate, new species Fig. 71a-c.

♀. Eyes widely separated by 3 facet diameters, no interocular suture; vertex little higher than width of eye bridge; frons covered with hair on anterior 2/3, wide median band extending to upper row of facets; palpal segment 1 longer than others, ratio of palpal segments=21:18:16:20. Antenna 15-segmented, segment 14 very small and obscure, but separated from 13 and 15; ascoids indistinct but apparently Y-shaped. Wing unmarked; forks complete, radial fork little distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate ending in 2, slender, rounded points separated by deep apical concavity; spermatheca large, with rows of spines on cephalic margin.

Antenna=0.72 mm, wing length=1.22 mm, width=0.47 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7329): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate.

The small size and widely separated eyes separate *paraloba* from other New Guinea species of *Psychoda* with an elongate 1st palpal segment.

155. ***Psychoda remata*** Quate and Quate, new species Fig. 71d-f.

♀. Eyes separated by 1 facet diameter, without interocular suture; vertex shorter than width of eye bridge; frons with triangular median band of hairs extending to upper row of facets; palpus with segment 1 longer than 2 and 3, ratio of segments=24:20:20:25. Antenna 15-segmented, segment 14 broadly fused to 13, 15 separated; ascoids Y-shaped. Wing forks complete, radial fork far

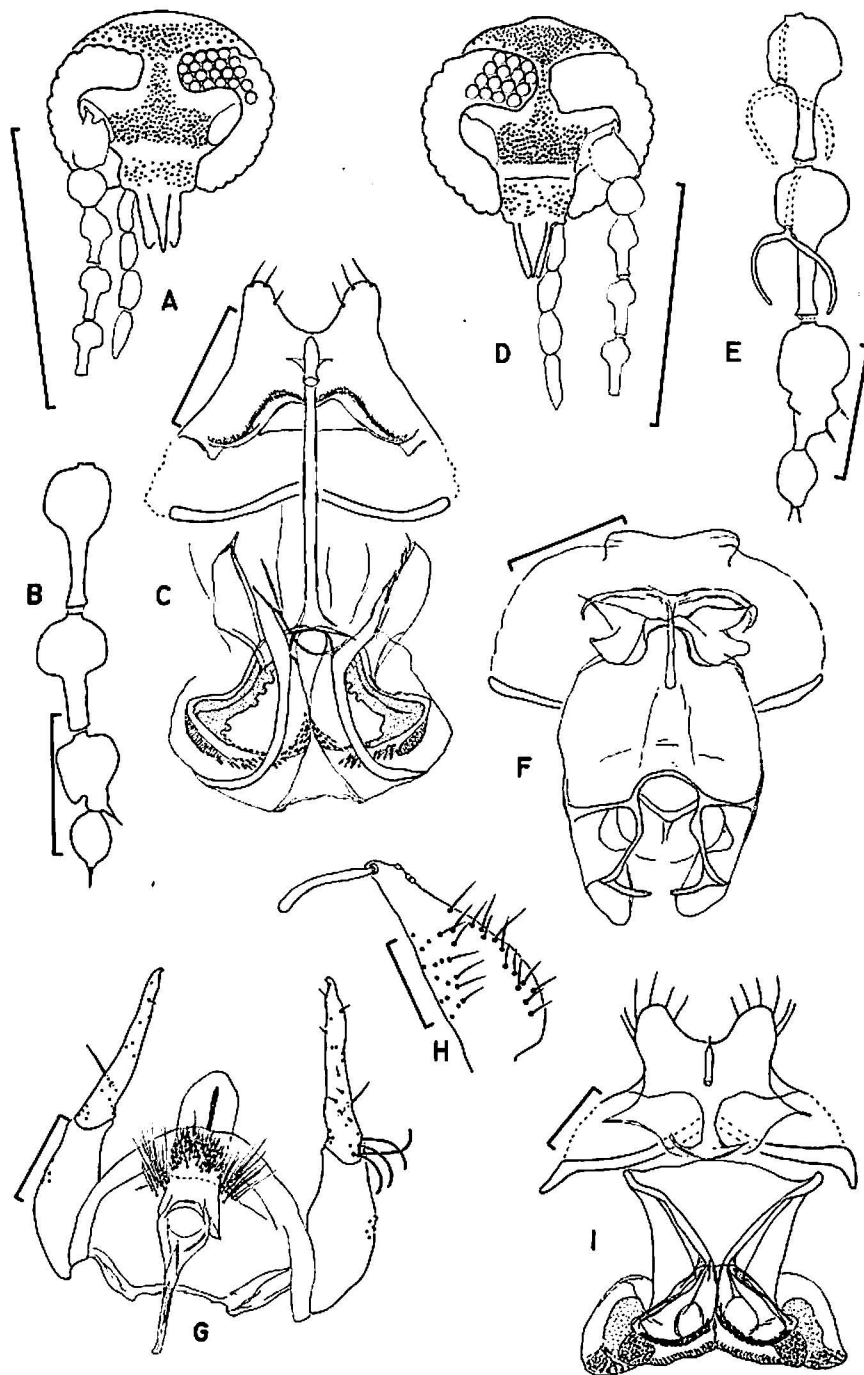


Fig. 71. a-c, *Psychoda paraloba*, ♀: a, head; b, antenna tip; c, genitalia. d-f, *Psychoda remata*, ♀: d, head; e, antenna tip; f, genitalia. g-i, *Psychoda ochra*: g, ♂ genitalia, dorsal; h, ♂ surstyle; i, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

distad of medial. Genitalia as illustrated; subgenital plate small with truncate apex and sides divergent posteriorly; spermatheca small and without spines or reticulations.

Antenna=0.83 mm, wing length=1.47 mm, width=0.55 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7330): NW New Guinea, Sibil Val., 18.X-8.XI.1961, light trap, L. & S. Quate.

156. **Psychoda ochra** Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 480; 1959, Pac. Ins. 1: 438; 1962 *ibid.* 4: 65. Fig. 71g-i.

DISTRIBUTION. Borneo, Caroline Is., Samoa, New Guinea.

NW NEW GUINEA: Volgelkop, Kebar Val., 4-31.I.1962, L. & S. Quate, 5 ♀♀, 8 ♂♂; Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate, 3 ♀♀, 7 ♂♂; Swart Val., Karubaka, 1450 m, 12.XI.1958, J.L. Gressitt, 1 ♀; Archbold L, 760 m, 26.XI-3.XII.1961, L. & S. Quate, 5 ♀♀, 4 ♂♂; Mulik R, 10 km W of Archbold L, 1050 m, 3-5.XII.1961, L. & S. Quate, 1 ♀, 3 ♂♂; Sibil Val., 1245 m, 18.X-8.XI.1961, L. & S. Quate, 1 ♂; Geelvink Bay, Nabire, 2-9.VII.1962, J.L. Gressitt & J. Sedlacek, 1 ♀; Biak I., 28.VII.1955, Gressitt, 1 ♀. NE NEW GUINEA: Wau, 31.III.1965, W.A. Steffan, 1 ♀, 1 ♂; Wau, 8.XII.1961, 2 ♀♀, L. & S. Quate; Lae-Bulolo Rd., 37 km W of Lae, 26.IV.1959, 6th Archb. Exped, 2 ♀♀, 4 ♂♂; Kratke Mts., Arau, 1400 m, 10.X.1959, 6th Arch. Exped, 2 ♀♀; Markham Val., Umi R, 480 m, 23.XI.1959, 6th Arch. Exped; 2 ♀♀, 2 ♂♂. PAPUA: Murua, 17-22.XII.1964, Steffan, 4 ♀♀, 3 ♂♂. NEW IRELAND: Kavieng, 3.VI.1959, W. Peters, 1 ♀. BOUGAINVILLE, Inis, 26.V.1959, W. Peters, 1 ♂.

New Guinea specimens of this widespread Pacific species are similar to those of the type locality in the Caroline Is. Some variation is noted in the female genitalia, but this is not significant enough to warrant a new name. The bar across the base of the subgenital plate in New Guinea specimens does not curve as far posteriorly as it does in the Micronesian specimens; also, there are some variations in the outline of the subgenital plate and the complex spermathecae, but these may be as much due to different positions on the slide as to actual differences in morphology. The males of the specimens from the two areas appear indistinguishable.

157. **Psychoda albescens** Quate and Quate, new species Fig. 72a-e.

♀. Eyes separated by 1-1.5 facet diameter, interocular suture absent, eye bridges curved down on inner margin; vertex measured on midline about equal in height to width of eye bridge; frons with wide median band of hairs extending posteriorly to upper margin of eye; palpal segment 1 subequal to or longer than 2, ratio of palpal segments=37:37(32):30:36. Antenna 15-segmented, segment 14 broadly fused to 13 and almost indistinguishable, 15 separated and pyriform; ascoids Y-shaped. Wings unmarked; forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as illustrated; subgenital plate with sides straight and convergent posteriorly, apex deeply concave, pair of hairy lobes flanking genital digit on inner face; spermatheca reticulate over lateral areas and with fine spines on medial and cephalic areas.

Antenna=1.00-1.25 mm, wing length=1.55-2.20 mm, width=0.67-1.02 mm.

♂. Similar to ♀. Eyes separated by less than 1 facet diameter. Genitalia as illustrated; dististyle very slender and slightly curved near apex; aedeagus straight and tubular, without lateral shaft; paramere truncated cone-shaped and finely setose; surstyle moderately long and broad over basal 2/3.

Antenna=1.02-1.22 mm, wing length=1.50-1.77 mm, width=0.60-0.85 mm.

Holotype ♀, allotype ♂ (BISHOP 7331): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 4 ♀♀, 6 ♂♂, same data

as types; 2 ♀♀, 3 ♂♂, Bokondini, 1300 m, 16-23.XI.1961, light trap, L. & S. Quate; 2 ♀♀, Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate.

Other specimens. NE New Guinea, Wampit R Val, 90 km from Lae, 670 m, 6.V.1959, 6th Archb. Exped, 1 ♀; Okapa area, Purosa camp, 1950 m, 26.IX.1959, 6th Archb. Exped, 6 ♀♀ Wau, 31.III.1965, W.A. Steffan, 2 ♀♀; Bainyik, nr Maprik, 225 m, 21.VI.1961, J.L. & M. Gressitt, 1 ♀. Bougainville, Inis, 26.V.1959, W. Peters, 3 ♀♀, 1 ♂.

This species is closely related to *ochra* and might be confused with it; however, *albescens* and *ochra* may be separated by the characters described in the key and figured in the illustrations. Because of the similarities between the two, it is reasonable to assume that they have originated from a common ancestor.

158. ***Psychoda occulta*** Quate and Quate, new species

Fig. 72f-h.

♂. Eyes separated by about 1 facet diameter, interocular suture absent; vertex shorter than

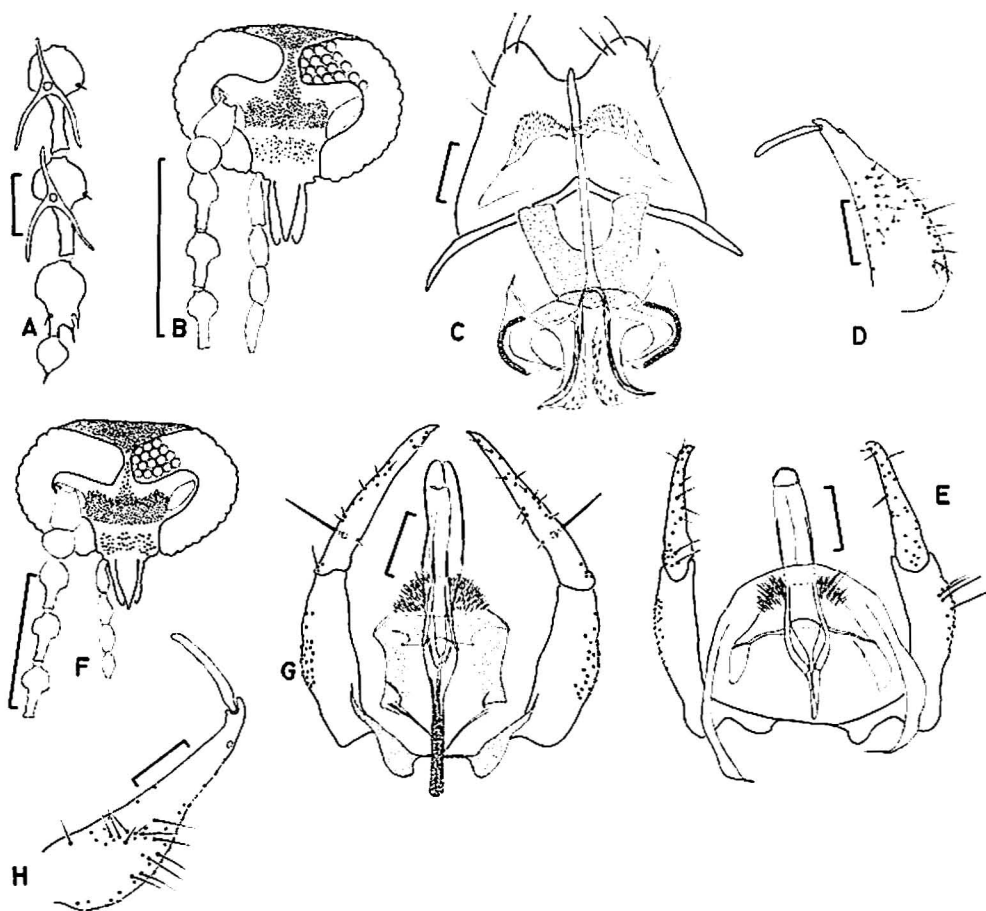


Fig. 72. a-e, *Psychoda albescens*: a, ♀ antenna tip; b, ♀ head; c, ♀ genitalia; d, ♂ surstyle; e, ♂ genitalia, dorsal. f-h, *Psychoda occulta*, ♂: f, head; g, genitalia, dorsal; h, surstyle. Scale lines of heads=0.3 mm; others=0.05 mm.

width of eye bridge; frons rather densely covered with hairs on anterior part and with sparse median band extending posteriorly to 2nd row of facets; palpus with 1st palpal segment longer than others, ratio of palpal segments=27:20:20:20. Antenna 15-segmented, segment 14 broadly fused to 13 and may appear indistinct, segment 15 separated and globular; ascoids Y-shaped. Wing forks complete, radial fork well distad of medial; C with strong curvature just beyond secondary node. Fore femur longer than tibia. Genitalia as figured; dististyle tapering to acute apex; aedeagus simple, tubular, without lateral shaft; paramere rounded and setose; surstyle elongate and enlarged over basal 1/2.

Antenna=1.13 mm, wing length=1.75-2.25 mm, width=0.77-1.05 mm.

♀. Unknown.

Holotype ♂ (BISHOP 7332): NW New Guinea, Sibil Val., 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 11 ♂♂, same data as type.

This species is related to *ochra* and *albescens* and is distinguishable from those species only by the characters of the male genitalia, particularly the rounded paramere and the structure of the aedeagus as shown in the illustrations.

159. ***Psychoda wilsoni*** Quate and Quate, new species Fig. 73a-f.

♀. Eyes separated by 2-2.5 facet diameters, interocular suture absent, eye bridge slightly curving down towards midline; vertex shorter than width of eye bridge; frons with hairs only on anterior 1/2, and wide median band extending posteriorly to center of eye bridge; ratio of palpal segments=20:25:25:35; labellum with 4 teeth and 2 spines. Antenna 16-segmented; terminal 3 segments of equal size and separated; ascoids Y-shaped. Wing forks complete and on same level; brown band at base and at level of forks. Fore femur longer than tibia. Genitalia as figured; subgenital plate with sloping sides and deep apical concavity, with ovoid, setose structure on inner face below genital digit; spermatheca sclerotized in distinctive pattern anteriorly and with fine setae on lateral and cephalic borders.

Antenna=0.78-0.88 mm, wing length=1.51 mm (1.37-1.70), width=0.60 mm (0.57-0.67).

♂. Similar to ♀. Genitalia as figured; dististyle very slender and elongate, with accessory seta very near base; aedeagus slender, simple, without basal pedicel before foramen; paramere rounded; 9th sternite truncate and forming rectangular shield over aedeagus; surstyle moderately slender with long tenaculum.

Antenna=0.78-0.93mm, wing length=1.28 mm (1.20-1.37), width=0.53 mm (0.50-0.57).

Holotype ♂, allotype ♀ (BISHOP 7333): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31. I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 9 ♀♀, 3 ♂♂, same data as types; 9 ♀♀, 9 ♂♂, Japen I., Kanyon Batu, 17 km E of Sumberbaba, 5.IX. 1962, in cave near damp bat guano, N. Wilson.

Other specimens. NE New Guinea, 15 km W of Lac, 19.IV.1965, Malaise trap, Y.M. Huang and W.A. Steffan, 1 ♂.

The banded wings and forks on the same level separates *wilsoni* from all other species without difficulty. Only *mirabilis* has the forks on the same level, but there are a great many other differences between *mirabilis* and *wilsoni* and they would not be confused.

We are pleased to dedicate this species to Dr Nixon Wilson, our colleague at the Bishop Museum.

160. ***Psychoda mirabilis*** Quate and Quate, new species Fig. 73g-j.

A large species with broad wings, ♂ with protuberant frons densely covered with hairs.

♂. Eyes separated by 1-2 facet diameters, interocular suture absent, eye bridge curving downward toward midline; vertex much higher than width of eye bridge, occiput flattened; frons protuber-

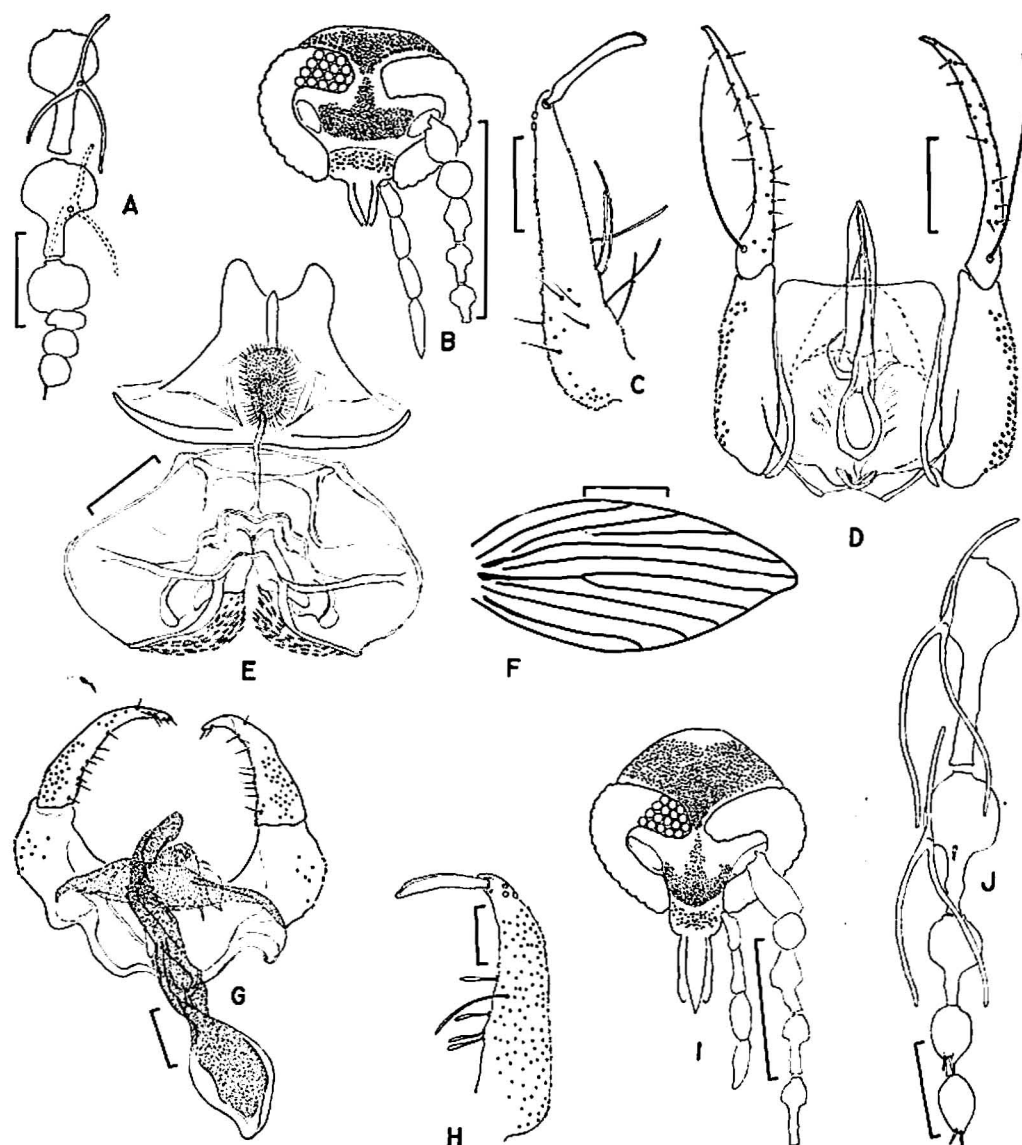


Fig. 73. a-f, *Psychoda wilsoni*: a, ♂ antenna tip; b, ♀ head; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia; f, ♀ wing. g-j, *Psychoda mirabilis*, ♂: g, genitalia, dorsal; h, surstyle; i, head; j, antenna tip. Scale lines of heads & wing = 0.3 mm; others = 0.05 mm.

ant on anterior part and heavily covered with hairs, posterior part with hairs only in sparse band on midline, which extends posteriorly to 2nd row of facets; ratio of palpal segments = 9:10:10:11 labellum with 4 teeth and 2 spines. Antenna 16-segmented; scape elongate, 2 × length of pedicel; node of 1st flagellar segment pyriform and much larger than following; terminal 3 segments separated and each with small internode, ascoids Y-shaped. Wing broad; forks complete and on same level; 2nd costal node enlarged and with tufts of hairs. Fore femur shorter than tibia. Genitalia

as figured; dististyle simple, tapering to acute apex; aedeagus heavily sclerotized, complex; paramere a simple, rounded, setose lobe; surstyle moderately long and nearly straight.

Antenna=1.47-1.70 mm, wing length=2.09 mm (1.85-2.30), width=1.09 mm (0.95-1.17).

♀. Similar to ♂; frons not protuberant but more heavily covered with hair than usual; 2nd costal node not as large as in ♂. Genitalia as figured; subgenital plate with divergent, rounded sides; spermatheca elongate and with serrate borders; genital digit absent.

Antenna=1.30-1.40 mm, wing length=1.67-1.92 mm, width=0.72-0.82 mm.

Holotype ♂, allotype ♀ (BISHOP 7334): NE New Guinea, 15 km W of Lae, 22-26.IV.1965, Y.M. Huang & W.A. Steffan.

The position of the wing forks, the radial and the medial being on the same level, immediately sets *mirabilis* apart from other New Guinea species of *Psychoda*. Also, the protuberant and haired frons of the male is a distinctive feature. This species seems most closely related to *rhinocera* but there are many differences between the two and it is unlikely they would be confused.

161. ***Psychoda rhinocera*** Quate and Quate, new species Fig. 74.

A broad-winged species with a horn-like projection on the frons of ♂.

♂. Eyes separated by about 2.5 facet diameters, interocular suture absent, eye bridges curving down near midline; vertex much higher on midline than width of eye bridge; frons with large, acutely pointed, horn-like projection from lower part, below projection a rounded protuberance thickly covered with hairs, hair patch divided into 2 parts and without median band; palpus with segment 1 longer than 2 and 3, ratio of segments=10:9:9:12; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment pyriform and larger than other nodes; segment 14 small

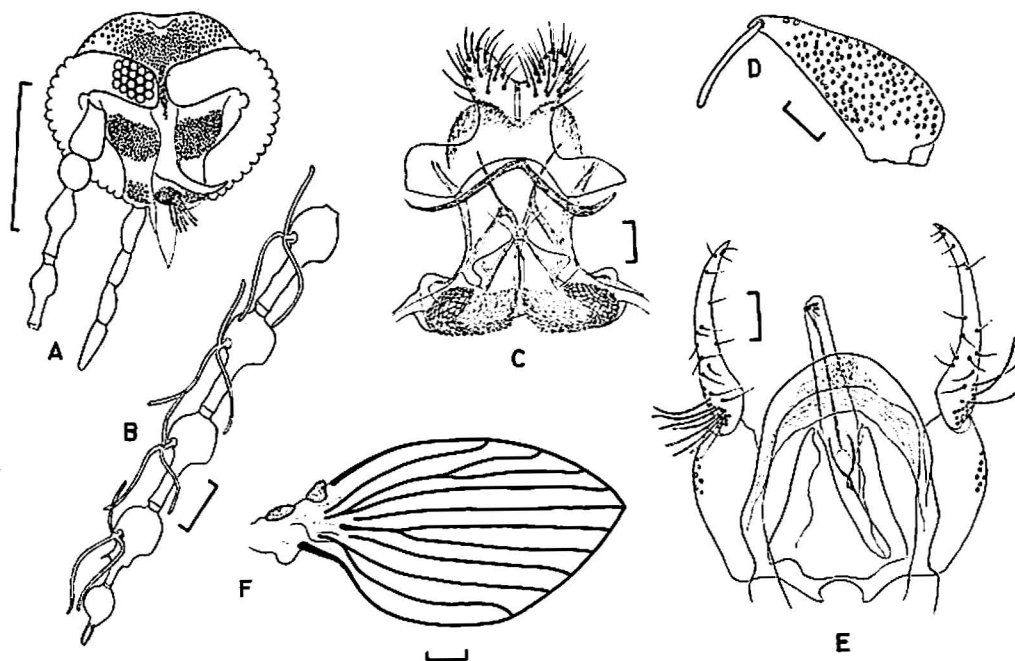


Fig. 74. *Psychoda rhinocera*: a, ♂ head; b, ♂ antenna tip; c, ♀ genitalia; d, ♂ surstyle; e, ♂ genitalia, dorsal; f, ♂ wing. Scale lines of head & wing=0.3 mm; other=0.5 mm.

and broadly fused to 13, segment 15 clearly separated from preceding and pyriform; ascoids Y-shaped. Prothorax with saccular patagium attached immediately behind spiracle, patagium cylindrical, thickly haired, little longer than pedicel and scape combined. Wing broad; forks complete, radial fork well distad of medial which is close to base of wing; 2nd costal node enlarged and extending beyond wing margin, thickly covered with long hairs. Fore femur and tibia subequal in length. Genitalia as figured; dististyle slender and tapering to acute apex; aedeagus simple, tubular; surstyle thick and moderately short, with very long tenaculum.

Antenna=1.46 mm (1.30-1.52), wing length=2.39 mm (2.10-2.62), width=1.25 mm (1.15-1.40).

♀. Similar to ♂. Frons lacking horn-like projection and protuberance; costal node of wing not enlarged and without unusually heavy vestiture, prothorax without patagium. Genitalia as figured; subgenital plate with sides divergent and somewhat Y-shaped; pair of large, setose lobes on inner face, genital digit long and extending to or beyond apical border of plate; spermatheca large and complex, heavily invested with plaque-like thickenings on cephalic border.

Antenna=1.27 mm (1.17-1.42), wing length=2.47 mm (2.15-2.75), width=1.23 mm (1.07-1.42).

Holotype ♂, allotype ♀ (BISHOP 7335): NE New Guinea, Wau, 1450 m, 20.XII.1961, wet rocks near swift stream, S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 43 ♂♂, 17 ♀♀, same data as types.

This is an unusual species and the peculiar modification of the frons with its horn and tuberosity makes it most conspicuous, since no other *Psychoda* is known to have this type of modification. It is also remarkable that the males bear prothoracic patagia and this is the only instance of these structures occurring in *Psychoda* and it was believed they were confined to *Pericoma s. l.*, *Brunettia* and *Telmatoscopus*. This is the most striking example of the peculiarities found in the New Guinea psychodid fauna.

P. rhinocera appears to be most closely related to *albescens* and *ochra*, based mainly on the configuration of the antennal tip, the male surstyle, and the female spermathecae; however, it is rather distantly removed from these two species if the male aedeagus and coxites are true indicators of phylogenetic distance.

162. ***Psychoda monticola*** Quate and Quate, new species Fig. 75a-b.

♀. Eyes separated by $1\frac{1}{2}$ -1 facet diameter, interocular suture absent; vertex very small, narrower than width of eye bridge; frons with triangular median band of hairs extending to almost upper margin of eye bridge; ratio of palpal segments=35(30):35:35:45; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment not noticeably larger than following; segments 14 and 15 slightly fused, 16 smaller than preceding and separated; ascoids Y-shaped. Wing forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; apical part of subgenital plate with sides divergent, apical concavity hemispherical; genital digit extends beyond apical border; small, bilobed, setose structure at base of digit on inner face.

Antenna=1.22-(1.40) mm, wing length=2.25-2.87 mm, width=0.97-1.20 mm.

Holotype ♀ (AMNH): NE New Guinea, E slopes of Mt. Wilhelm, Pengagl camp, 2770 m, VII-1959, 6th Archbold Exped. Paratypes (AMNH, BISHOP): 5 ♀♀, same data as type.

163. ***Psychoda alveata*** Quate and Quate, new species Fig. 75c-d.

Small, yellowish species with Y-shaped subgenital plate.

♀. Eyes separated by 1-1.5 facet diameters, interocular suture absent; vertex very small, narrower than width of eye bridge; frons with median band of hairs extending to upper row of facets;

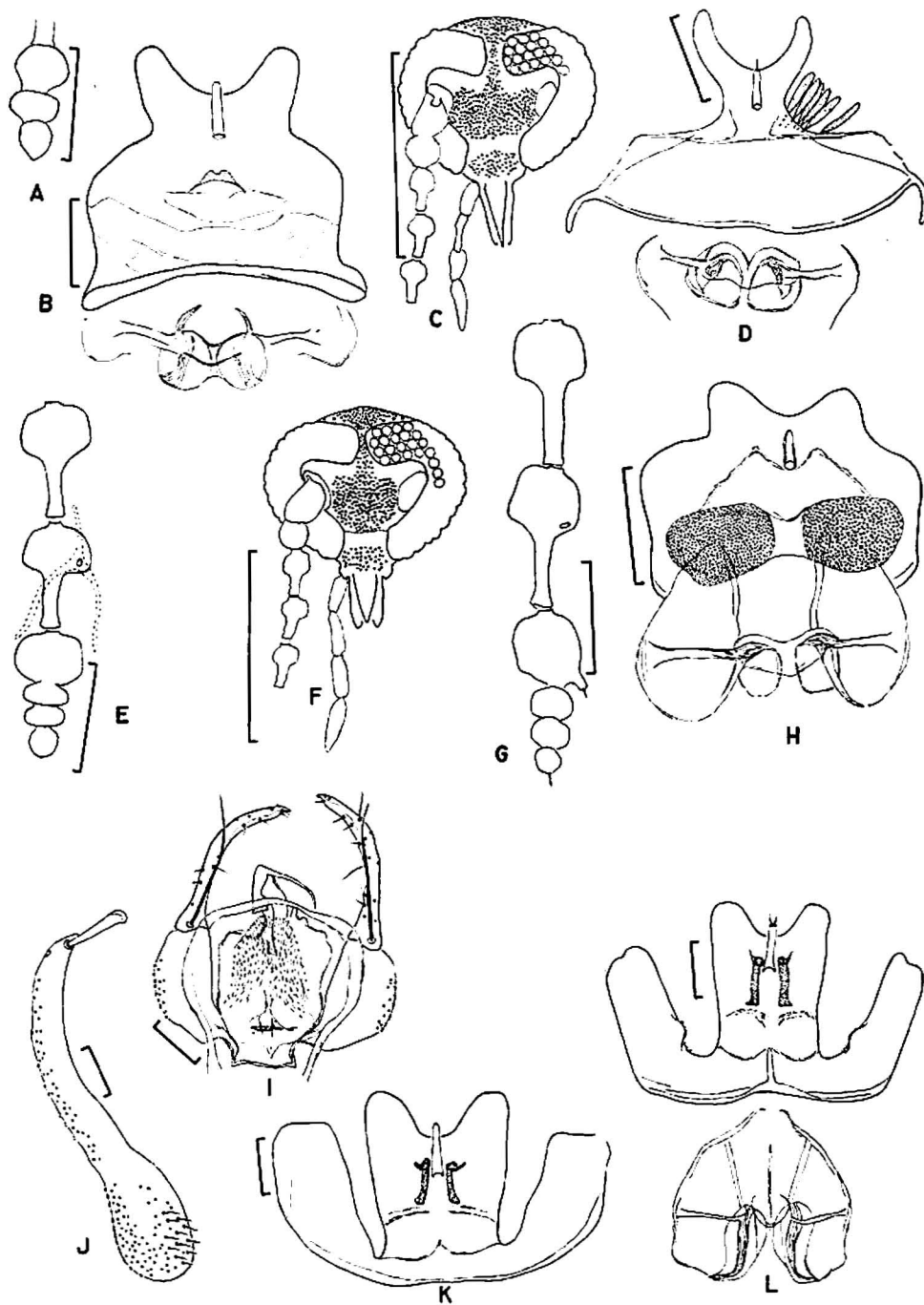


Fig. 75. a-b, *Psychoda monticola*, ♀: a, antenna tip; b, genitalia. c-d, *Psychoda alveata*, ♀: c, head; d, genitalia; e, antenna tip. f-h, *Psychoda rosetta*, ♀: f, head; g, antenna tip; h, genitalia. i-l, *Psychoda harrisi*: i, ♂ genitalia, dorsal; j, ♂ surstyle; k, l, ♀ genitalia. Scale lines of heads = 0.3 mm; others = 0.05 mm.

palpus with segment 2 longer than 1 and 3, ratio of segments=17:25:20:30; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment little larger than following; segments 14 and 15 partly fused, 16 separated and smaller than 15; ascoids Y-shaped. Wing forks complete, radial distad of medial. Fore femur longer than tibia. Subgenital plate Y-shaped, with many spatulate hairs on basal part; genital digit extends little beyond apical margin; spermatheca small and circular.

Antenna=0.77-0.84 mm, wing length=1.30-1.52 mm, width=0.55-0.67 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7336): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 7 ♀♀, same data as type; 1 ♀, NW NG, Bokondini, 1300 m, 16-23.XI.1961, L. & S. Quate; 2 ♀♀, NE New Guinea, Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped.

164. *Psychoda rosetta* Quate and Quate, new species Fig. 75f-h.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex very small, much narrower than width of eye bridge; frons with median band of hair extending posteriorly to 3rd row of facets; ratio of palpal segments=22:27:27:34; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment but little larger than following; terminal 3 segments separated, 16 little smaller than 14 and 15; ascoids Y-shaped. Wing forks complete, radial far distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate bilobed with pair of conspicuous, rosette-like lobes on inner face near base, spermatheca small.

Antenna=0.76-0.93 mm, wing length=1.25-1.45 mm, width=0.50-0.62 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7337): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH): 5 ♀♀, same data as type.

165. *Psychoda harrisi* Satchell, 1950, Trans. R. Ent. Soc. Lond. **101**: 171 (♂, ♀ illus.); 1953, Austral. J. Zool. **1**: 374; 1954, Trans. R. Ent. Soc. Lond. **105**: 478. -Quate, 1954, Proc. Haw. Ent. Soc. **15**: 354; 1959, Ins. Micronesia (Bishop Mus.) **12**(4): 484; 1961, Proc. Haw. Ent. Soc. **17**: 437; 1962, Pac. Ins. **4**: 57, 234; 1965, *ibid.* **7**: 883. Fig. 75i-l.

Psychoda bifurcata Tokunaga, 1958, Phil. J. Sci. **86**: 378.

Psychoda hamatifer Tokunaga, 1958, *ibid.* **86**: 385.

DISTRIBUTION. Widespread in Pacific, India to Hawaii, Ryukyu Is. to Australia.

NW NEW GUINEA: Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate, 50 ♀♀, 9 ♂♂; Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate, 53 ♀♀, 16 ♂♂; Sibil Val., 18.X-8.XI.1961, L. & S. Quate, 33 ♀♀, 8 ♂♂; Wissel L., Enarotali, 2000 m, 3-15.VII.1962, N. Wilson, 10 ♀♀, 11 ♂♂; Waris, 1-7.VIII.1959, T.C. Maa, 1 ♀. NE NEW GUINEA: Wau, 14.II.1963, J. Sedlacek, 1 ♀, 1 ♂, same, 31.III.1965, W.A. Steffan, 1 ♀; 15 km W of Lae, 17.IV.1965, Steffan, 3 ♀♀; 37 km W of Lae, 28.IV.1959, 3 ♀♀, 1 ♂; Kaindi, 2050 m, 25.V.1959, 6th Archb. Exped, 10 ♀♀; NE slopes of Mt Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 6th Archb. Exped, 50 ♀♀, 5 ♂♂; Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6 ♀♀, 1 ♂; Kratke Mts, Arau, 1400 m, 10-23.X.1959, 6th Archb. Exped, 2 ♀♀; Markham Val., Umi R, 480 m 18-23.XI.1959, 6th Archb. Exped, 4 ♀♀; Nondugl, 9.VII.1955, Gressitt, 1 ♀; NE slopes of Mt. Hagan, Tomba, 2450 m, 25.V.1963, Sedlacek, 3 ♀♀, 3 ♂♂; Mt. Otto, 2200 m, 24.VI.1965, Gressitt, 2 ♀♀; Daulo Pass, 2400 m, 12.VI.1955, Gressitt, 7 ♀♀, 1 ♂; Upper Chimbu Val., Numbu, 2400 m, 5.VII.1955, Gressitt, 1 ♀; Karimui, 1080 m, 14.VII.1963, Sedlacek, 2 ♀♀; Kassam, 48 km E of Kainantu, 7.XI.1959, Maa, 1 ♀; Sepik Distr, Dreikikir, 25.VI.1961, Gressitt, 1 ♀; Minj, 23.VI.1957, D.E.

Hardy, 1 ♀; Adelbert Mts, Wanuma, 23.X.1958, Gressitt, 2 ♀♀, 1 ♂. PAPUA: SE of Mt Giluwe, Dimifa, 2200 m, 10.X.1958, Gressitt, 1 ♂; Murua, 17-22.XII.1964, Steffan, 1 ♀. NEW IRELAND: Gilingil Pl'n, 5.VII.1956, Gressitt, 1 ♀. Specimens largely collected by light trap or Malaise trap.

This common, widespread species is subject to a great deal of variation. Most noticeable is size variation, in which the wing length varies from about 1 mm to 3 mm. The female subgenital plate also may show considerable differences in various populations; the central lobe may be thinner or wider and the basal flaps which extend laterally from the base of the central lobe may be rather slender or moderately wide. However, the essential features of the general outline of the subgenital plate, the 2 dark comma-shaped spots on either side of the genital digit and the small spermathecae remain constant in all the specimens. Illustrations have been provided of the two extremes in variations of the female genitalia. The male genitalia seem rather constant, except for size variation. It is characterized by the long, slender dististyle with the large accessory seta very close to the base, the setose paramere, and the complex aedeagus with the strongly recurved hook-like apex.

We do not find geographical segregation in the variants, but they seem to appear at random in different populations and therefore we have included all of them under the single taxon which we call *harrisi*.

166. ***Psychoda macispina*** Quate and Quate, new species Fig. 76a-e.

♀. Eyes separated by 1.5-2 facet diameters, interocular suture absent; vertex narrower than width of eye bridge; frons with wide median band extending posteriorly to upper edge of bridge and nearly joining hairs on vertex; ratio of palpal segments=30:30:30:42; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment little larger than following; segments 13, 14, 15 broadly fused, 16 separated and smaller than preceding, pyriform; ascoids Y-shaped. Wing acutely pointed; forks complete but R_3 and M_2 may be weakened at forks. Fore femur longer than tibia. Genitalia as illustrated; subgenital plate ending in 2, moderately acute lobes separated by deep concavity; genital digit slender and long, extending far beyond border of plate; spermatheca small.

Antenna=0.98 mm (0.83-1.12), wing length=1.95 mm (1.55-2.32), width=0.80 mm (0.62-0.97).

♂. Similar to ♀; eyes separated by 1/2-1 facet diameter. Genitalia as figured; dististyle long, slender and curved near apex, with accessory seta at basal 1/3; aedeagus main shaft ending in curved, beak-like apex and lateral lobe ending in 2 curved, acute points well before apex of main shaft, paramere bare; surstyle longer and more slender than usual in *Psychoda*.

Antenna=1.09 mm (0.95-1.22), wing length=1.52 mm (1.35-1.80), width=0.68 mm (0.55-0.77).

Holotype ♀, allotype ♂ (BISHOP 7338): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, light and Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 108 ♀♀, 13 ♂♂, same data as types; 1 ♀, Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate; 2 ♀♀, 7 ♂♂, Sibil Val., 18.X-8.XI.1961, L. & S. Quate.

Other specimens. NW New Guinea, Waris, S of Hollandia, 500 m, 16-23.VIII.1959, at light, T.C. Maa.

The male of this species is similar to *harrisi*, but the genitalia of the two differ in that the accessory spine of the dististyle of *macispina* is well removed from the base while in *harrisi* it is very close to the base and the paramere of *macispina* is bare, while it is setose in *harrisi*; there are other differences which may be noted in the illustrations. The female of *macispina* is quite distinct with its slenderly bilobed subgenital plate and long, slender genital digit.

167. *Psychoda crenula* Quate, 1962, Pac. Ins. 4: 55; 1965, *ibid.* 7: 885.

DISTRIBUTION. Ryukyus, Philippines, Borneo, New Guinea.

NW NEW GUINEA: Vogelkop, Kebar Val., 550 m, 4-31.I.1962, L. & S. Quate, 35 ♀♀; Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate, 9 ♀♀; Baliem Val., Wamena, 18.II.1960, T.C. Maa, 3 ♀♀; Mulik R., 10 km W of Archbold L, 1050 m, 3-5.XII.1961, L. & S. Quate, 2 ♀♀; Sibil Val., 1245 m, 18.X-8.XI.1961, L. & S. Quate, 31 ♀♀; Swart Val., Karubaka, 1450 m, 12.XI.1958, Gressitt. NE NEW GUINEA: Sepik Distr., Dreikikir, 350 m, 23.VI.1961, J.L. & M.

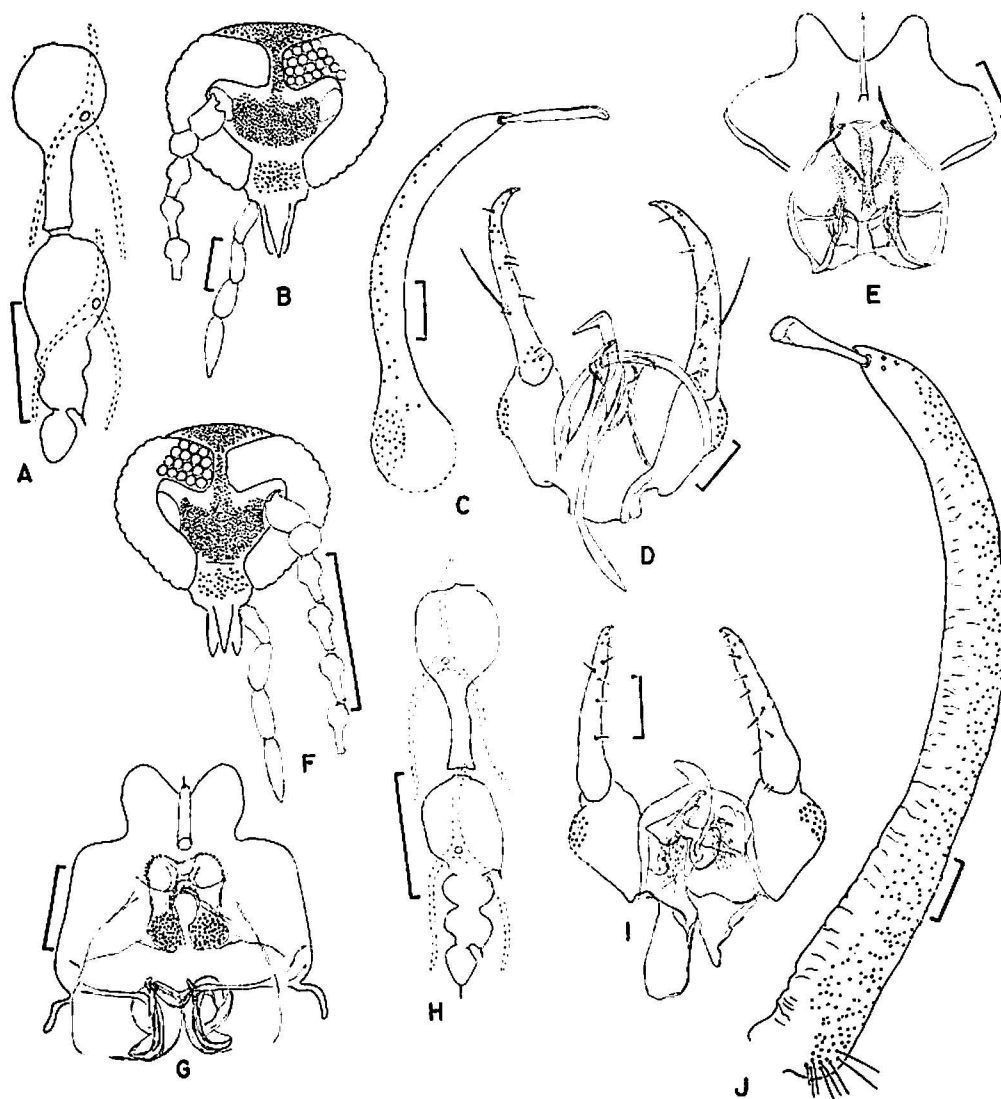


Fig. 76. a-e, *Psychoda macispina*: a, ♀ antenna tip; b, ♀ head; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-j, *Psychoda spinipeltata*: f, ♀ head; g, ♀ genitalia; h, ♀ antenna tip; i, ♂ genitalia, dorsal; j, ♂ surstyle. Scale lines of heads=0.3 mm; others=0.05 mm.

Gressitt, 1 ♀; Wau, 31.III.1965, W.A. Steffan, 2 ♀♀; Wau, 1-15.IV.1963, J. Sedlacek, 1 ♀; Wau, 17-19.XII.1961, L. & S. Quate, 6 ♀♀; Kaindi, 2050 m, 25.V.1959, 6th Archb. Exped, 2 ♀♀; E slopes of Mt. Wilhelm, Pengagl camp, 8-10.IX.1959, 6th Archb. Exped, 3 ♀♀; NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 15 ♀♀; Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped, 18 ♀♀; Kratke Mts, Arau, 1400 m, 10-24.X.1959, 6th Archb. Exped, 4 ♀♀; Markham Val., Umi R., 480 m, 18-23.XI.1959, 6th Arch. Exped, 5 ♀♀; Mt. Otto, 2200 m, 24.VI.1955, Gressitt, 1 ♀; Torricelli Mts., Molutei, 8.II-4.III.1959, W.W. Brandt, 1 ♀; Adelbert Mts, Wanuma, 1000 m, 23.X.1958, Gressitt, 7 ♀♀.

This widespread, Asian species is not difficult to recognize with its 16-segmented antenna and the female genitalia in which the subgenital plate has an ovoid, crenulated structure on the inner face in front of the genital digit. These features have been illustrated in the original description of Borneo specimens and material from other localities agree closely with the topotypic material. Males of *crenula* are still unknown in spite of the abundance of the females in many areas and it is not unlikely that this species may prove to be parthenogenetic.

168. ***Psychoda spinipeltata*** Quate and Quate, new species Fig. 76f-j.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex small, narrower than width of eye bridge; frons with elongate triangular band of hairs extending to 3rd row of facets; ratio of palpal segments=35(30):35:40; labellum with 3 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment, but little larger than following; segments 13, 14, 15 fused, 16 separated, smaller than preceding, pyriform; ascoids Y-shaped. Wing forks complete, but R_3 and M_2 may be weakened at forks, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with broad base at apical part constricted and bilobed, inner face with shield-like structure which has spiny or serrate margins and base of which excavated in ovoid opening; spermatheca small.

Antenna=1.06 mm (0.95-1.17), wing length=1.79 mm (1.62-2.00), width=0.74 mm (0.62-0.92).

♂. Similar to ♀; eyes separated by 1 or little less than 1 facet diameter. Genitalia as figured; aedeagus short and thick and ending in broad curve; paramere densely setose; surstyle unusually large, very long.

Antenna=1.10-1.40 mm, wing length=1.50-2.07 mm, width=0.62-0.85.

Holotype ♀ (BISHOP 7339): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, L. & S. Quate; allotype ♂ (BISHOP): NW New Guinea, Wissel L., Enarotali, 1830 m, 15.VII.1962, ex swiftlet nest in cave, N. Wilson. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 9 ♀♀, 3 ♂♂, same data as holotype; 6 ♀♀, 8 ♂♂, same data as allotype; 2 ♀♀, Swart Val., Karubaka, 1450 m, 12.XI.1958, Gressitt; 1 ♀, Bokondini, 5-11.XI.1961, L. & S. Quate; 1 ♀, NE New Guinea, Mt Otto, 2200 m, 24.VI.1955, Gressitt; 1 ♀, Kaindi, 2050 m, 15.V.1959, 6th Archb. Exped; 3 ♀♀, NE New Guinea, NE Slopes Mt Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 6th Archb. Exped.

Other specimens. NE New Guinea: Daulo Pass area, 2500 m, 4.VII.1957, D.E. Hardy, 1 ♀; Mt Otto, above Kabebe, 24.VI.1955, Gressitt, 3 ♀♀.

169. ***Psychoda dissidens*** Quate and Quate, new species Fig. 77a-b.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex much shorter than width of eye bridge; frons with median band of hairs extending to upper row of facets; ratio of palpal segments=30:35:35:45; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of flagellar segment 1 scarcely larger than following; terminal 3 segments equal in size and

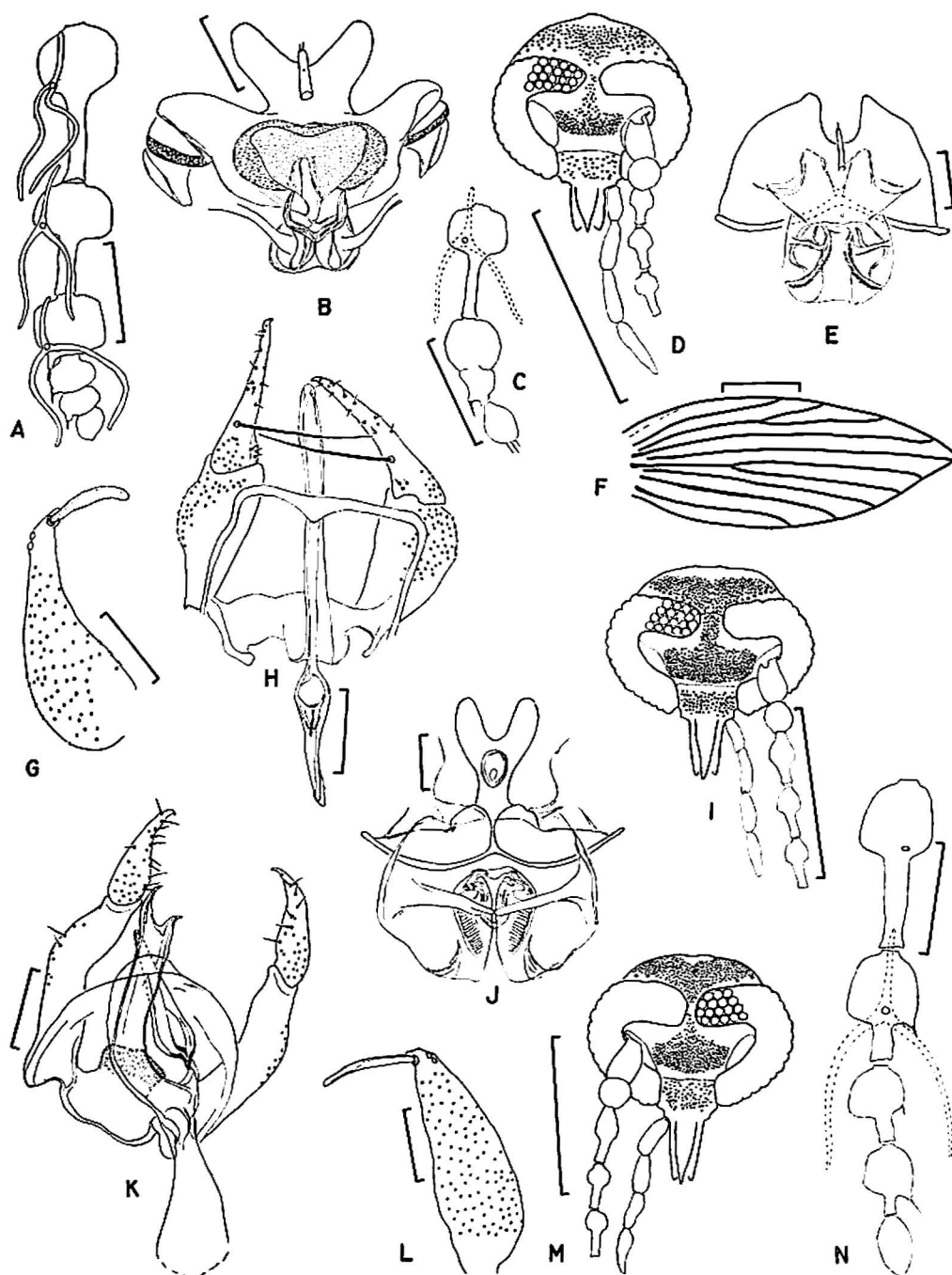


Fig. 77. a-b, *Psychoda dissidens*, ♀: a, antenna tip; b, genitalia. c-f, *Psychoda gemella*, ♀: c, antenna tip; d, head; e, genitalia; f, wing. g-i, *Psychoda kalabanica*, ♂: g, surstyle; h, genitalia, dorsal; i, head. j-k, *Psychoda paraguadensis*: j, ♀ genitalia; k, ♂ genitalia, dorsal; l, ♂ surstyle; m, ♀ head; n, ♀ antenna tip. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

separated; ascoids Y-shaped. Wing forks complete; radial fork far distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate Y-shaped with thick stem and wide base; genital digit extending well beyond border of plate; spermatheca small.

Antenna=1.08 mm, wing length=1.92-2.40 mm, width=0.80-1.00 mm.

♂. Unknown.

Holotype ♀ (AMNH): NE New Guinea, E slopes of Mt. Wilhelm, Pengagl camp, 2770 m, VII.1959, L.J. Brass, 6th Archbold Exped. Paratypes (BISHOP, AMNH): 4 ♀♀, same data as types.

170. ***Psychoda gemella*** Quate and Quate, new species Fig. 77c-f.

♀. Eyes separated by 2 facet diameters, interocular suture absent; vertex little higher than width of eye bridge; frons with hairs only on anterior 1/2, median band extending posteriorly to 3rd row of facets; ratio of palpal segments=20:30:30:35; labellum apparently with 3 teeth and 2 spines. Antenna 16-segmented; node of flagellar segment 1 scarcely larger than following; segments 13, 14 and 15 broadly fused, 16 separated; ascoids Y-shaped. Wing slender; forks complete, radial fork little distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate hemispherical with deep U-shaped, apical concavity; spermatheca with thick fringe of setae on cephalic margin.

Antenna=0.72-0.83 mm, wing length=1.45-1.55 mm, width=0.50-0.52 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7340): NW New Guinea, Sibil Val., 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratype: 1 ♀, same data as type.

171. ***Psychoda kalabanica*** Quate, 1962, Pac. Ins. 4: 57. Fig. 77g-i.

DISTRIBUTION. Borneo, New Guinea.

NW NEW GUINEA: Vogelkop, Kebar Val., 550 m, 4-31.I.1962, L. & S. Quate, 11 ♀♀, 23 ♂♂; Wissel L., Itouda, 12.VIII.1955, Gressitt, 18 ♀♀, 3 ♂♂; Nabire, S of Geelvink Bay, 2-9.VII.1962, Gressitt & Sedlacek, 1 ♀; Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate, 2 ♀♀; Hablufuri R, SE of Bokondini, 25.IX.1961, L. & S. Quate, 12 ♀♀, 31 ♂♂; Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate, 54 ♀♀, 108 ♂♂; Mulik R., 10 km W of Archbold L., 1050 m, 3-5.XII.1961, L. & S. Quate, 29 ♀♀, 18 ♂♂; Sibil Val., 1245 m, 18.X-8.XI.1961, L. & S. Quate, 20 ♀♀, 6 ♂♂; Hollandia, 27.VII.1955, Gressitt, 1 ♀. NE NEW GUINEA: 15 km W of Lae, 17.IV.1965, Y.M. Huang & W.A. Steffan, 2 ♀♀; 37 km W of Lae, Lae-Bulolo Rd, 100 m, 28.IV.1959, 6th Archb. Exped, 7 ♀♀; Wampit Riv. Val., 76 km from Lae, 670 m, 6.V.1959, 6th Archb. Exped, 1 ♀; Wampit Val., nr. Gurakor village, 7.VII.1957, D.E. Hardy, 1 ♀, 2 ♂♂; NE slopes of Mt Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 1 ♀; Markham Val., Umi Riv, 480 m, 18-23.XI.1959, 7 ♀♀, 1 ♂; Nondugl, 9.VII.1955, Gressitt, 1 ♂. NEW BRITAIN: Linga Linga Pl'n, W of Willaumez Pen., 14.IV.1956, Gressitt, 1 ♂.

This species, which has appeared abundantly in many localities in New Guinea, is easily distinguished by the female subgenital plate, which is particularly characterized by the elongate spermatheca and the numerous, long spines on the cephalic margin, and the simple male aedeagus as figured. The male is illustrated here for the first time; male specimens were associated with the female in many localities and there is little doubt that this association is correct. The widely separated eyes in both sexes also help to establish this association and to separate *kalabanica* from other species with 16-segmented antennae.

172. ***Psychoda paraguadens*** Quate and Quate, new species Fig. 77j-k.

♀. Eyes separated by 1 or little more than 1 facet diameter, interocular suture absent; vertex

higher on midline than width of eye bridge; median band of hairs on frons extends only to middle of eye bridge; ratio of palpal segments=30:30(35):30:35; labellum with 3 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment much larger than following and pyriform; terminal 3 segments well separated, 13, 14 and 15 with internodes, 16 ovoid, smaller than 14 and 15; ascoids Y-shaped. Wing forks complete, radial fork little distad of medial. Fore femur and tibia subequal in length. Genitalia as illustrated; subgenital plate Y-shaped, genital digit large and ovoid; spermatheca strongly crenulate on lateral border.

Antenna=1.13 mm (1.07-1.32), wing length=1.81 mm (1.60-2.12), width=0.70 mm (0.62-0.82).

♂. Similar to ♀; eyes separated by less than 1 facet diameter; median band of frons extending only to 2nd row of facets. Genitalia as figured; dististyle shorter than basistyle, ending in acute, elongate apex; aedeagus complex, curved beyond foramen and ending in 2 unequal, acute points; surstyle short and stocky.

Antenna=1.12-1.42 mm, wing length=1.62-2.07 mm, width=0.62-0.80 mm.

Holotype ♀ (BISHOP 7341): NW New Guinea, Vogelkop, Kebar Val., 4-31.I.1962, Malaise trap, L. & S. Quate; allotype ♂ (BISHOP): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, L. & S. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 12 ♀♀, 9 ♂♂, same data as holotype; 2 ♀♀, 3 ♂♂, same data as allotype.

The 16-segmented antenna with distinctly separated terminal segments, the large vertex, and short and stocky male surstyle indicates a relationship of *paraguadens* to *cetreta* and its related Micronesian species. However, this relationship must be rather distant and it is not as closely related as the other species are to each other. The Y-shaped subgenital plate and small male dististyle are quite distinct from those structures in the other species.

173. *Psychoda cetreta* Quate and Quate, new species Fig. 78k-m.

♀. Eyes separated by about 1.5 facet diameters, interocular suture absent; vertex subequal to height of eye bridge, hairs on vertex extend anteriorly to middle of eye bridge; frons with median band extending posteriorly only to 1st row of facets; ratio of palpal segments=25:35:32:40; labellum with 4 teeth and 2 spines, teeth small, 2 basal separated from apical 2. Antenna 16-segmented; node of 1st flagellar segment little larger than following nodes; terminal 3 segments separated and 14 and 15 with distinct internodes; ascoids Y-shaped. Wing forks complete, radial fork little distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate ending in truncated, cordate apex, and with pair of truncate, densely setose lobes on either side at about center of plate, genital digit small and club-shaped; spermatheca well sclerotized, large shield-like plate below spermatheca with central spear-like bar and pair of smaller bars at sides.

Antenna=0.98-1.11 mm, wing length=1.77 mm (1.62-2.02), width=0.68 mm (0.62-0.75).

♂. Similar to ♀; eyes separated by little more than 1/2 facet diameter. Genitalia as figured; dististyle with large lobe on mesal face at base bearing number of long bristles, apex ending in claw-like projection; aedeagus with main shaft broad, straight, tapering to rounded apex and lateral shaft more slender and tapering to acute apex; surstyle short and stocky.

Antenna=1.13 mm, wing length=1.55-1.72 mm, width=0.62-0.67 mm.

Holotype ♀, allotype ♂ (BISHOP 7342): Bougainville I., Inis, 26.V.1959, light trap, W. Peters. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 8 ♀♀, 1 ♂, same data as types; 1 ♀, New Ireland, Kavieng, 3.VI.1959, light trap, Peters.

Together with three species from Micronesia, *plaesia*, *hemicorcula*, and *acutilamina* (Quate 1959), *cetreta* forms a complex of closely related species, which is characterized by 16-segmented antennae,

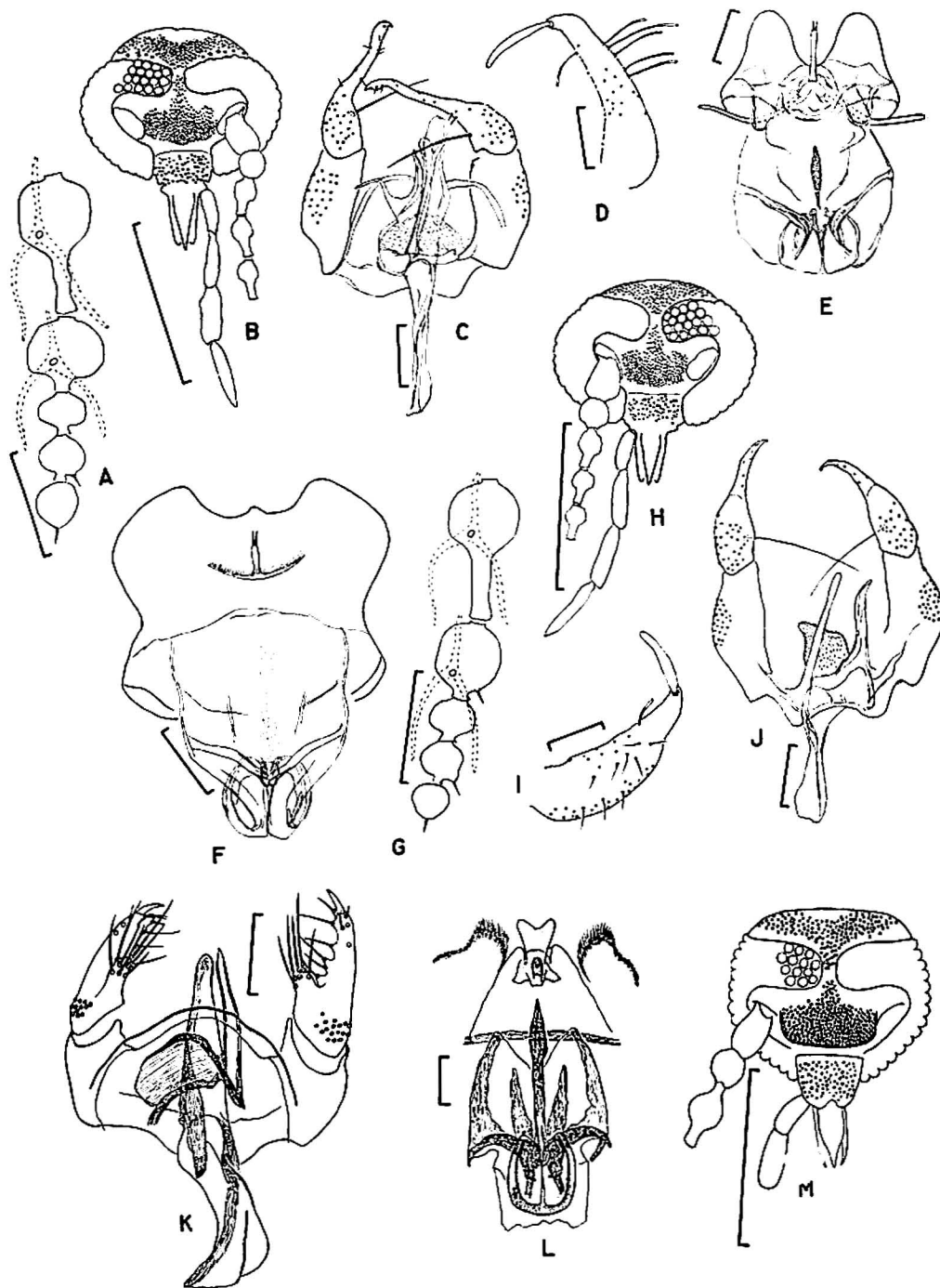


Fig. 78. a-e, *Psychoda sectiga*: a, ♀ antenna tip; b, ♀ head; c, ♂ genitalia, dorsal; d, ♂ surstyle; e, ♂ genitalia. f-j, *Psychoda tumorosa*: f, ♀ genitalia; g, ♀ antenna tip; h, ♀ head; i, ♂ surstyle; j, ♂ genitalia, dorsal. k-m, *Psychoda cetreta*: k, ♂ genitalia, dorsal; l, ♀ genitalia; m, ♀ head. Scale lines of heads=0.3 mm; others=0.05 mm.

short, stocky surstyle of the male genitalia, and a large plate under the spermathecae of the female genitalia. It would appear that all these species have originated from common stock. Because of the wide divergences in the genitalia of the four species, we assume that their separation is an old one and their distribution and speciation has long preceded transport by man. Whether the origin of this complex was in the New Guinea area, southeast Asia, or Oceania is not possible to say at the present. Of the New Guinea species, *celreia* is most closely related to the preceding one, *paraguadens*.

174. ***Psychoda sectiga*** Quate and Quate, new species Fig. 78a-e.

♀. Eyes separated by 1.5-2 facet diameters, interocular suture sometimes very faint; vertex on midline higher than width of eye bridge; frons with wide median band extending posteriorly to upper row of facets but distinctly separated from vertex hairs; ratio of palpal segments=33:35:40:50; labellum with 4 long teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment a little larger than following; terminal 3 segments separated, 16 little smaller than 14 and 15; ascoids Y-shaped. Wing forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with very deep concavity and hence plate consists largely of 2 lobes, genital digit long and slender, extends far beyond border of plate, large, circular lobe on inner face which bears microtrichiae on dorsal surface, basal rim of plate deeply indented at midline; spermatheca hemispherical and prominent.

Antenna=0.97 mm (0.81-1.20), wing length=1.84 mm (1.57-2.15), width=0.74 mm (0.62-0.87).

♂. Similar to ♀; eyes separated by 2 facet diameters. Genitalia as illustrated; dististyle bulbous at base, narrowing at about basal 1/3 and slender and a little sinuous beyond, apex a small, beak-like point; main shaft of aedeagus nearly straight and rounded at apex, lateral shaft short and curved, ending well before apex of main shaft; surstyle moderately short and stocky.

Antenna=1.13 mm (0.95-1.32), wing length=1.70 mm (1.42-1.90), width=0.72 mm (0.60-0.82).

Holotype ♀, allotype ♂ (BISHOP 7343): NW New Guinea, Bokondini, 5-11.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 22 ♀♀, 10 ♂♂, same data as types; 14 ♀♀, 4 ♂♂, Wissel L., Enarotali, 1830 m, 15.VII.1962, ex swiftlet nest in cave N. Wilson; 14 ♀♀, Wissel L., Urapura & Itouda, Kamo Val., 12-15.VIII.1955, Gressitt; 6 ♀♀, Swart Val., Karubaka, 1450 m, 12.IX.1958, Gressitt; 1 ♀, Mulik Riv. 10 km W of Archbold L., 1050 m, 3-5.XII.1961, L. & S. Quate.

Other specimens. NE New Guinea, upper Jimmi Val., Tsenga, 1200 m, 15.VII.1955, Gressitt.

The deeply emarginate apical border of the female subgenital plate easily separates *sectiga* from other New Guinea species of *Psychoda* with 16-segmented antennae; males are less easily separated from near relatives, *tumorosa*, *spinacia*, and *echinata*, but the constriction of the dististyle at the basal 1/3 and the short lateral shaft of the aedeagus, as shown in the illustrations, distinguishes *sectiga*.

175. ***Psychoda tumorosa*** Quate and Quate, new species Fig. 78f-j.

♀. Eyes separated by 1-1.5 facet diameters, interocular suture absent; vertex on midline subequal to height of eye bridge; frons with wide median band extending only to middle of eye bridge and well separated from hairs on vertex; ratio of palpal segments=30:40:40:55; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment little larger than following; terminal 3 segments separated and subequal in size; ascoids Y-shaped. Wing forks complete, radial fork distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate broad and with shallow but wide apical concavity which has small projection in center, genital digit small

and does not reach apical border; spermatheca moderately small, plate under spermatheca large and sclerotized.

Antenna=0.94 mm (0.82-1.10), wing length=1.67 mm (1.47-1.92), width=0.70 mm (0.62-0.85).

♂. Similar to ♀; eyes separated by 1.5 facet diameters. Genitalia as figured; dististyle bulbous on basal 1/2 and constricted at about center, distal 1/2 slender and curved; main shaft of aedeagus straight and slender, lateral shaft curved apically, extends to apex of main shaft; paramere asymmetrically truncate; surstyle moderately short and stocky.

Antenna=1.11 mm (0.97-1.27), wing length=1.53 mm (1.27-1.70), width=0.70 mm (0.57-0.75).

Holotype ♀, allotype ♂ (BISHOP 7344): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 30 ♀♀, 4 ♂♂, same data as types; 57 ♀♀, 49 ♂♂, Bokondini, 1300 m, 5-11.XI.1961, S. & L. Quate; 12 ♀♀, 12 ♂♂, Archbold L., 760 m, 26.XI-3.XII.1961, S. & L. Quate; 1 ♀, Sibil Val., 1245 m, 18.X-8.XI.1961, S. & L. Quate; 1 ♂, Hollandia, 22.XII.1961, L. & S. Quate. NE New Guinea: 2 ♀♀, 1 ♂, Wau, 31.III.1965, W.A. Steffan; 2 ♀♀, 1 ♂, 37 km W of Lae, Lae-Bulolo Rd, 100 m, 28.IV.1959, 6th Arch. Exped; 1 ♀, Kaindi, 15 km from Lae, 2050 m, 25.V.1959, 6th Archb. Exped; 6 ♀♀, 3 ♂♂, Markham Val., Umi Riv. 480 m, 18-23.XI.1959, 6th Archb. Exped; 1 ♂, Kundiawa, 6-8.I.1965, Steffan.

Other specimens. New Britain, Keravat, 22.VIII.1960, L. Smee, 1 ♂.

The broad, weakly indented subgenital plate of the female of *tumorosa* is unique of the New Guinea species and makes the female readily identifiable. The male is also distinct, but more likely to be confused with other species; however, the truncated paramere (which may be distorted or invisible in poorly mounted specimens), the relative lengths of the two shafts of the aedeagus, and the shape of dististyle characterizes *tumorosa* and separates it from other, related species.

176. **Psychoda aponesos** Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 465; 1959, Pac. Ins. 1: 437; 1962, *ibid.*, 4: 55, 234; 1962, Proc. Haw. Ent. Soc. 18: 186; 1965, Pac. Ins. 7: 883. Fig. 79a-c.

DISTRIBUTION. India, Malaya, Borneo, Philippines, Caroline Is, New Guinea, New Britain, New Ireland, Bougainville, Samoa.

NW NEW GUINEA: Hollandia, VII-XII.1961, at light, R.T. Simon Thomas, 14 ♀♀, 2 ♂♂. NE NEW GUINEA: Waghi Val., Banz, 1500 m, 10.VII.1955, J.L. Gressitt, 1 ♀; 15 km W of Lae, 17-26.IV.1965, Malaise trap, Y.M. Huang & W.A. Steffan, 3 ♀♀; 37 km W of Lae, Lae-Bulolo Rd, 100 m, 28.IV.1959, 6th Archb. Exped, 5 ♀♀; Wampit Riv. Val., 75 km from Lae, 670 m, 5.V.1959, 6th Archb. Exped, 1 ♀.

BOUGAINVILLE. Inis, 26.V.1959, light trap, W. Peters, 9 ♀♀. NEW BRITAIN: Keravat, 22-26.VIII.1960, L. Smee; Linga Linga Pl'n., W of Willaumez Pen., 14.IV.1956, Gressitt, 7 ♀♀. NEW IRELAND: Kavieng, 3.VI.1959, Peters, 1 ♀.

This is an expected extension of the range of *aponesos*, which is already known to be widely distributed in the Asian area. New illustrations of the female and male genitalia are included herein to aid in its identification.

177. **Psychoda spinacia** Quate and Quate, new species Fig. 79d-h.

♀. Eyes separated by little more than 1 facet diameter, interocular suture absent; vertex usually little narrower than width of eye bridge; frons with median band of hairs extending to upper row of facets; ratio of palpal segments=28:32:38:48; labellum with 4 teeth and 2 spines.

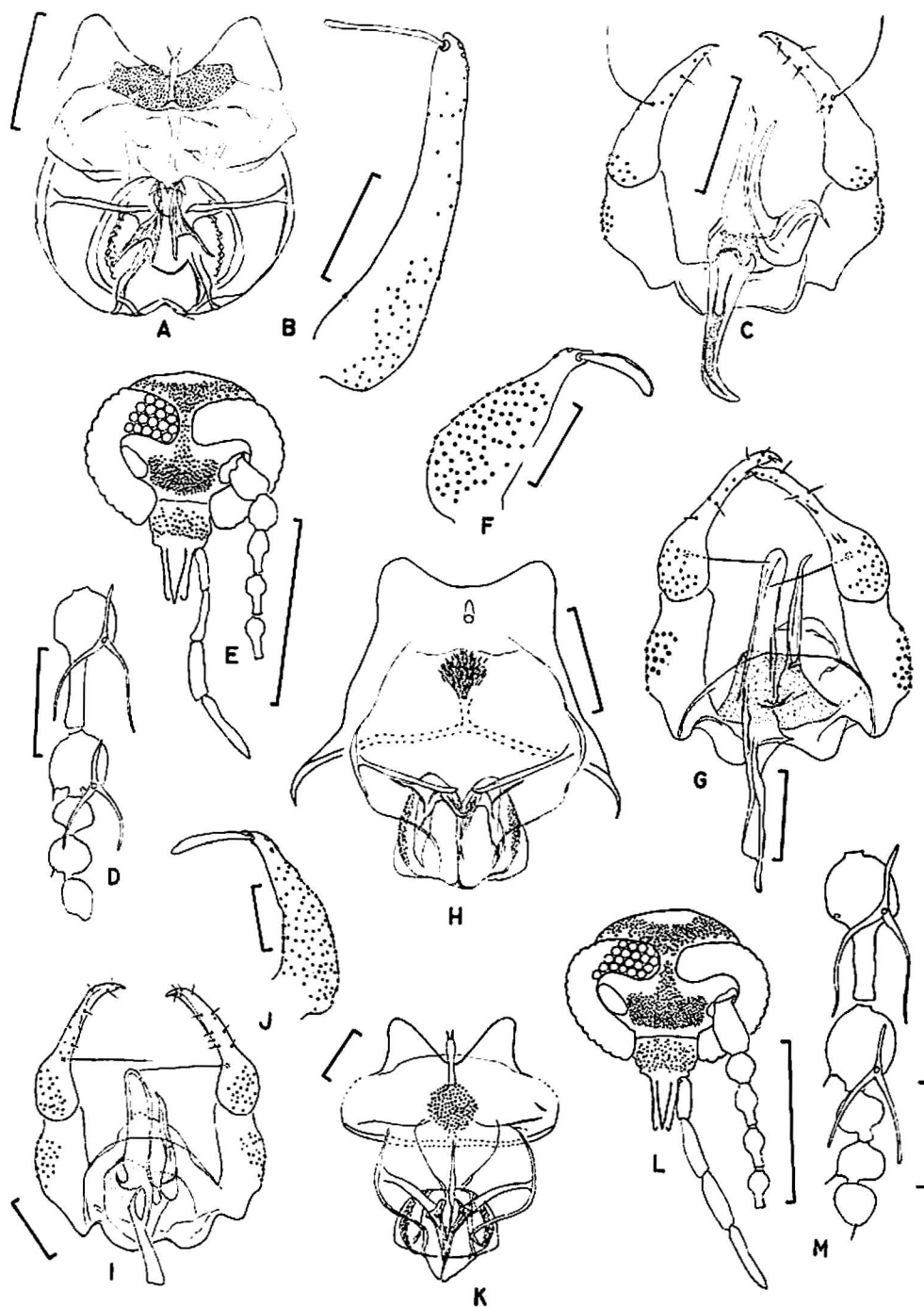


Fig. 79. a-c, *Psychoda aponeos*: a, ♀ genitalia; b, ♂ surstyle; c, ♂ genitalia, dorsal. d-h, *Psychoda spinacia*: d, ♀ antenna tip; e, ♀ head; f, ♂ surstyle; g, ♂ genitalia, dorsal; h, ♀ genitalia. i-m, *Psychoda echinata*: i, ♂ genitalia, dorsal; j, ♂ surstyle; k, ♀ genitalia; l, ♀ head; m, ♀ antenna tip. Scale lines of heads=0.3 mm; others=0.05 mm.

Antenna 16-segmented; node of 1st flagellar segment little larger than following; terminal 3 segments separated and subequal; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as illustrated; subgenital plate somewhat quadrate with concave apical border, patch of setae on inner face of plate arranged in regular, spray-like fashion, all directed caudad or laterad; genital digit small and extends beyond border of plate; spermatheca rectangular with rounded corners.

Antenna=0.82 mm (0.75-0.90), wing length=1.46 mm (1.35-1.69), width=0.56 mm (0.50-0.72).

♂. Similar to ♀; vertex larger than in ♀, higher than width of eye bridge. Genitalia as figured; dististyle inflated on basal 1/3 and slender over remainder, accessory seta in center of inflated area; main shaft of aedeagus straight with rounded apex, lateral shaft slender with curved apex and extending to apex of main shaft; paramere lightly setose, asymmetrically bilobed; surstyle short and stocky.

Antenna=0.97 mm (0.92-1.05), wing length=1.36 mm (1.27-1.52), width=0.57 mm (0.50-0.67).

Holotype ♀, allotype ♂ (BISHOP 7345): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, S. & L. Quate. Paratypes (USNM, BMNH, CSIRO): 16 ♀♀, 11 ♂♂, same data as types; 10 ♀♀, NW NG, Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate; 1 ♀, Archbold L, 760 m, 26.XI-3.XII.1961, L. & S. Quate; 1 ♀, Mulik R, 10 km W of Archbold L, 1050 m, 3-5.XII.1961, L. & S. Quate.

Other specimens. NE New Guinea: E slopes of Mt. Wilhelm, Pengagl Camp, 2770 m, 8-10.IX.1959, 6th Archb. Exped, 1 ♀; NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 6th Archb. Exped, 4 ♀♀; Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped, 16 ♀♀.

The quadrate subgenital plate of the female with the spray-like pattern of setae on the inner face is characteristic of this species, as is the male dististyle with its inflated base, the short, stocky surstyle and the lateral shaft of the aedeagus extending to the tip of the main shaft. The nearest relative of this species is *echinata*, which appears similar in both sexes. There are differences, however, in the genitalia of the two species as indicated in the key and figures.

178. *Psychoda echinata* Quate and Quate, new species Fig. 79i-m.

♀. Eyes separated by 1.5-2 facet diameters, interocular suture absent; vertex on midline higher than width of eye bridge; frons with wide median band extending posteriorly to 3rd row of facets; ratio of palpal segments=30:40:45:55; labellum with 4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment a little larger than following; terminal 3 segments separated and subequal in size; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with 2, moderately acute lobes separated by deep, V-shaped notch; circular patch of seta on inner face coarse and easily seen under moderate magnification, genital digit elongate and extends well beyond border; spermatheca hemispherical and reticulate on lateral surface.

Antenna=0.94 mm (0.87-1.02), wing length=1.69 mm (1.40-1.90), width=0.70 mm (0.55-0.75).

♂. Similar to ♀. Genitalia as figured; dististyle inflated on basal 1/3 and distal 2/3, slender; main shaft of aedeagus straight and rounded apically, lateral shaft short and acute; paramere asymmetrical; surstyle about 4 times as long as wide.

Antenna=1.03 mm (0.97-1.10), wing length=1.52 mm (1.35-1.62), width=0.65 mm (0.62-0.67).

Holotype ♀, allotype ♂ (BISHOP 7346): NW New Guinea, Bokondini, 16-23.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 21 ♀♀, 23 ♂♂, same data as types; 1 ♀, 12 ♂♂, Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate; 1 ♀, Mulik R, 10 km W of Archbold L, 1050 m, 3-5.XII.1961, L. & S. Quate; NE New Guinea, Markham Val., Umi Riv, 480 m, 18-23.XI.1959, 6th Archb. Exped.

P. echinata is most likely to be confused with *spinacia*, but these two species can be told apart most readily by the structure on the inner face of the subgenital plate in the female—a circular patch of setae in *echinata* and a spray-like patch in *spinacia*—and the male aedeagus—lateral shaft shorter than the main shaft in *echinata* and of equal length in *spinacia*.

179. ***Psychoda vesca*** Quate and Quate, new species Fig. 80a-f.

♀. Eyes separated by 1.5-2 facet diameters, interocular suture absent; vertex on midline higher than width of eye bridge; frons with wide median band extending posteriorly to 3rd row of facets; palpus with 1st segment inflated and more bulbous than others, ratio=25:30:35:45; labellum indistinct but apparently with 3 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment but little larger than following; terminal 2 segments separated and equal in size; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate broad at base with rounded, sloping sides and ending in pair of lobes, inner face with pair of setose lobes flanking genital digit, genital digit small and apparently does not extend to border.

Antenna=0.65 mm, wing length=1.02-1.22 mm, width=0.37-0.42 mm.

♂. Similar to ♀; eyes separated by 2 facet diameters. Genitalia as figured; aedeagus simple, straight, consisting only of main shaft; paramere simple and symmetrical; sternite 9 a broad, quadrate shelf over aedeagus; surstyle short and stocky.

Antenna=0.68-0.70 mm, wing length=1.00-1.08 mm, width=0.37-0.42 mm.

Holotype ♀, allotype ♂ (BISHOP 7347): NW New Guinea, Vogelkop, Kebar Val., 4-31.I.1962, light trap, S. & L. Quate. Paratypes (BISHOP): 1 ♀, 2 ♂♂, same data as types.

180. ***Psychoda concinna*** Quate and Quate, new species Fig. 80g-k.

♀. Eyes separated by about 1/2 facet diameter, interocular suture absent; vertex small, on midline narrower than width of eye bridge; frons with elongate triangular median band extending only to middle of eye bridge; ratio of palpal segments=25:25:20:30; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment subequal in size to following; terminal 2 segments separated and equal sized; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with large base with rounded, sloping sides, and somewhat cordate apical lobe, genital digit indistinct and apparently very short and standing erect; spermatheca elongate ovoid, lateral surface reticulate, plate below spermatheca extends laterad in flap-like extension.

Antenna=0.89-0.97 mm, wing length=1.42-1.75 mm, width=0.52-0.65 mm.

♂. Similar to ♀; eyes narrowly separated by less than 1/2 facet diameter. Genitalia as figured; dististyle tapering to recurved, acute apex, with long accessory seta at about basal 1/3; dististyle simple, straight and with rounded apex; paramere large and U-shaped; surstyle inflated basally and slender distally.

Antenna=0.85-1.24 mm, wing length=1.20-1.75 mm, width=0.47-0.67 mm.

Holotype ♀, allotype ♂ (BISHOP 7348): NW New Guinea, Sibil Val., 18.X-8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 5 ♀♀, 9 ♂♂, same data as types; 1 ♀, 2 ♂♂, Vogelkop, Kebar Val., 4-31.I.1962, Malaise trap, S. & L. Quate.

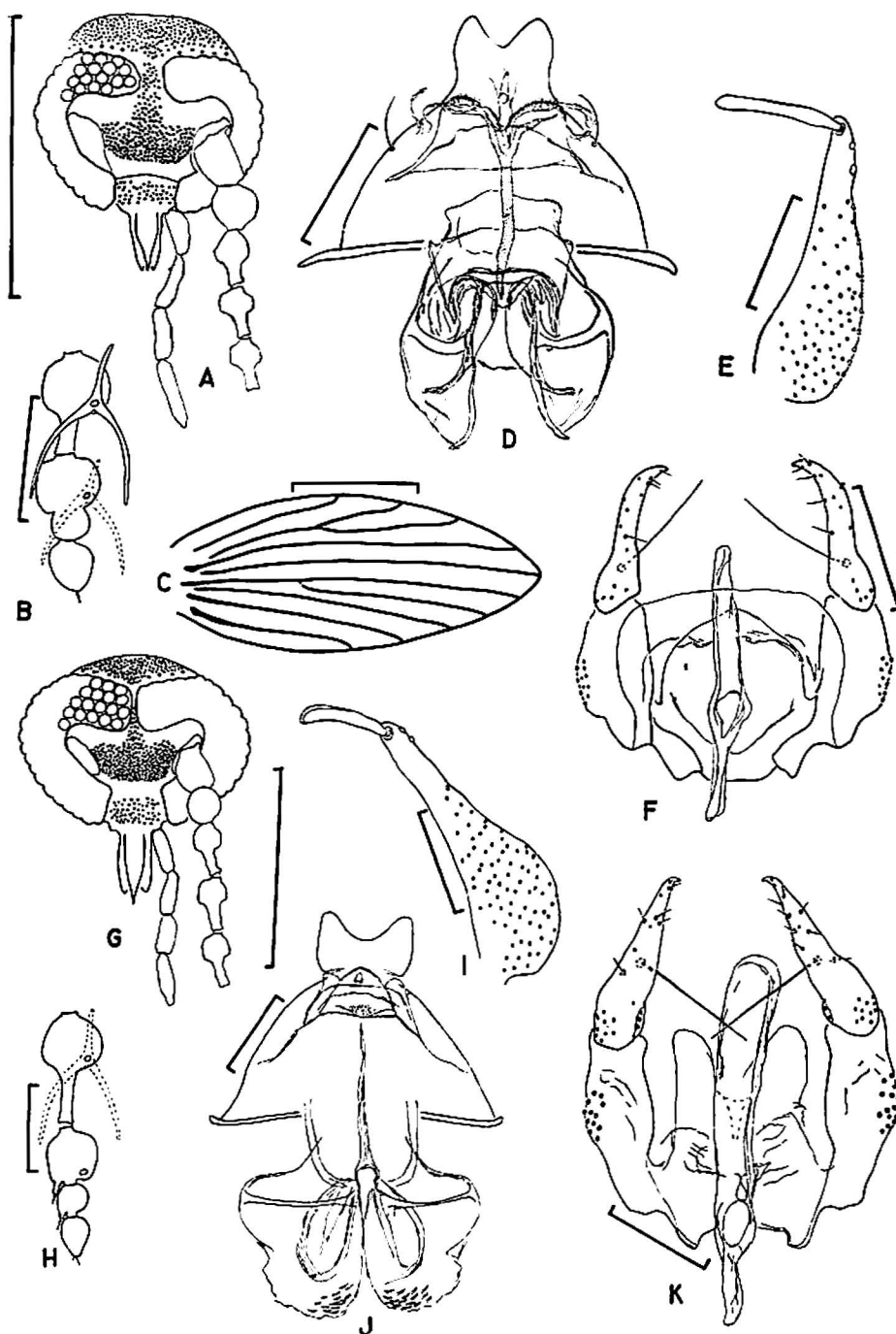


Fig. 80. a-f, *Psychoda vesca*: a, ♂ head; b, ♂ antenna tip; c, ♀ wing; d, ♀ genitalia; e, ♂ surstyle; f, ♂ genitalia, dorsal. g-k, *Psychoda concinna*: g, ♀ head; h, ♀ antenna tip; i, ♂ surstyle; j, ♀ genitalia; k, ♂ genitalia, dorsal. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

181. *Psychoda hastata* Quate and Quate, new species Fig. 81a-e.

♀. Eyes separated by 1-1.5 facet diameters, interocular suture absent; vertex narrower than width of eye bridge; frons with triangular patch of hair extending posteriorly to 3rd row of facets; ratio of palpal segments=23:23:21:28; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment but little larger than following; terminal 2 segments separated and equal sized; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate an elongate, quadrate plate with concave apex, genital digit very long and extends beyond border of plate, at center of plate on inner face a small, truncate shelf-like appendage; spermatheca small and somewhat quadrate.

Antenna=0.81 mm (0.72-0.90), wing length=1.23 mm (1.07-1.42), width=0.50 mm (0.42-0.55).

♂. Similar to ♀; eyes separated by 1-1.5 facet diameters. Genitalia as figured; aedeagus complex, distal part spatulate with 3, upturned, pointed projections on dorsal surface (only 2 of which shown in illustration), lateral shaft slender and sinuous; surstyle of usual *Psychoda* shape.

Antenna=0.81 mm (0.72-0.90), wing length 1.23 mm (1.07-1.42), width=0.50 mm (0.42-0.55).

Holotype ♀ (BISHOP 7349): NW New Guinea, Sibil Val., 18.X-8.XI.1961, light trap, S. & L. Quate; allotype ♂ (BISHOP): Vogelkop, Kebar Val., 4-31.I.1962, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 13 ♀♀, 14 ♂♂, same data as holotype; 15 ♀♀, 37 ♂♂, same data as allotype; 1 ♀, Nabire, S of Geelvink Bay, 2-9.VII.1962, Gressitt & Sedlacek; 2 ♀♀, 1 ♂, Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate; 8 ♀♀, 4 ♂♂, Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate; 2 ♀♀, Fak-Fak, 4-7.VI.1959, T.C. Maa. NE New Guinea: 5 ♀♀, 4 ♂♂, Wau, 20.XI.1961, J. Sedlacek; 1 ♀, Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped; 1 ♂, Markham Val., Umi Riv, 480 m, 18-23.XI.1959, 6th Archb. Exped.

Other specimens. NE NG, Adelbert Mts, Wanuma, 800 m, 26.X.1958, Gressitt, 1 ♀.

The elongate, quadrate subgenital plate of the female with the long slender genital digit and the median, spear-like bar in the center (not shown in illustration) and the complex male aedeagus, especially the three upturned points on the dorsal surface, are characters which render the identification of *hastata* a rather simple matter.

182. *Psychoda serpentina* Quate, 1965, Pac. Ins. 7: 895. Fig. 81f.

DISTRIBUTION. Philippines, New Guinea.

NW NEW GUINEA: Vogelkop, Kebar Val., 4-31.I.1965, S. & L. Quate, 27 ♂♂, 15 ♀♀; Vogelkop, Manokwari, 21.VII.1957, D.E. Hardy, 1 ♂; Baliem Val., Wamena, 18.II.1960, T.C. Maa. NE NEW GUINEA: Markham Val., Umi Riv, 480 m, 18-23.XI.1959, 6th Archb. Exped, 12 ♂♂.

The males of *serpentina* are easily recognized by the long, sinuous lateral shaft of the aedeagus. The females, illustrated herein for the first time, are rather nondescript and not as outstanding as the males; the subgenital plate is characterized by its straight sloping sides and the large bilobed plate on the inner face in front of the genital digit.

183. *Psychoda oculifera* Quate and Quate, new species Fig. 81g-k.

♀. Eyes separated by 2-3 facet diameters, interocular suture absent, eye bridge slender and much smaller than usual in *Psychoda*; vertex much higher than width of eye bridge; frons with wide median band extending posteriorly to upper margin of bridge; ratio of palpal segments=23(28):28:28:33; labellum with 4 small teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar

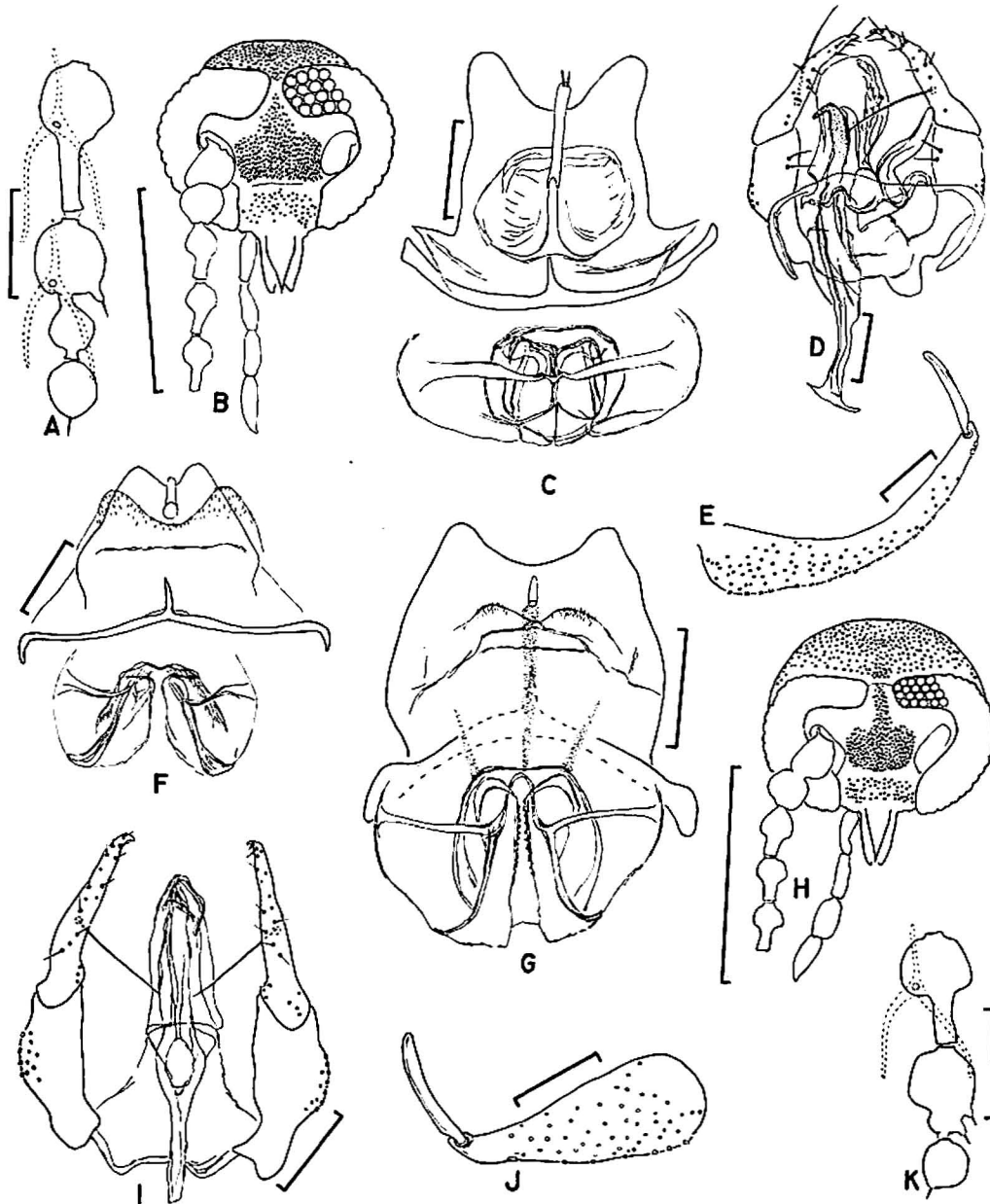


Fig. 81. a-c, *Psychoda hastata*: a, ♀ antenna tip; b, ♀ head; c, ♀ genitalia; d, ♂ genitalia, dorsal; e, ♂ surstyle. f, *Psychoda serpentina*: ♀ genitalia. g-k, *Psychoda oculifera*: g, ♀ genitalia; h, ♀ head; i, ♂ genitalia, dorsal; j, ♂ surstyle; k, ♀ antenna tip. Scale lines of heads=0.3 mm; others=0.05 mm

segment little larger than following; segment 14 greatly reduced and fused to 13, 15 free and pyriform; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with convergent sides and moderately deep apical concavity, with pair of small, setose lobes on inner face in front of genital digit; spermatheca elongate and with well-developed longitudinal ridge.

Antenna=0.82 mm, wing length=1.37-1.55 mm, width=0.57-0.62 mm.

♂. Similar to ♀. Genitalia as figured; dististyle rather slender, with long accessory seta near center; aedeagus broad and arrow-shaped distally (or trowel-shaped); surstyle short and stocky.

Antenna=1.02 mm, wing length=1.50 mm, width=0.65 mm.

Holotype ♀, allotype ♂ (BISHOP 7350): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, S. & L. Quate. Paratypes: 2 ♀♀, same data as types.

In addition to the genitalic characters, the slender eye bridge is a characteristic feature of *oculifera*.

184. ***Psychoda pala*** Quate and Quate, new species Fig. 82a-c.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex small, much narrower than width of eye bridge; median band of frons extending posteriorly to upper margin of bridge and nearly joining hairs on vertex; ratio of palpal segments=29:31:29:40; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar no larger than following; segment 14 solidly fused to 13 and smaller than 15, 15 separated and pyriform; ascoids 4-branched. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate somewhat quadrate with narrow base and indented apical margin; spermatheca striate or crenulate over most of surface.

Antenna=0.90 mm (0.82-0.98), wing length=1.69 mm (1.50-1.80), width=0.68 mm (0.60-0.77).

♂. Unknown.

Holotype ♀ (BISHOP 7351): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 7 ♀♀, same data as type; 3 ♀♀, Bokondini, 1300 m, 5-11.XI.1961, light trap, S. & L. Quate; 1 ♀, Wissel L, Itouda, Kamo Val., 12.VIII.1955, Gressitt; 1 ♀, Swart Val., Karubaka, 1450 m, 12.XI.1958, Gressitt. NE NEW GUINEA: 3 ♀♀, Kaindi, 2050 m, 25.V.1959, 6th Archb. Exped; 1 ♀ S slopes of Mt. Otto, Koton, 2200 m, 10.VIII.1959, 6th Archb. Exped; 1 ♀, Mt., Otto, 2200 m, 24.VI.1955, Gressitt; 1 ♀, Mt. Wilhelm, Toromomburo, 2200 m, 29.VI.1955, Gressitt; 1 ♀, NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 6th Archb. Exped; 200 ♀♀, Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped.

The female subgenital plate is distinctive and unlikely to be confused with any other New Guinea species of *Psychoda*. The 15-segmented antenna and 4-branched ascoids would indicate a relationship to the *quadrifilis* complex, but the female genitalia seems quite distinct from those in that complex.

185. ***Psychoda adercus*** Quate, 1962, Pac. Ins. 4: 66; 1965, *ibid*, 7: 891.

DISTRIBUTION. Philippines, Borneo, New Guinea.

NW NEW GUINEA. Vogelkop, Manokwari, 21.VII.1957, light trap, D.E. Hardy, 7 ♀♀; Kebar Val., 4-31.I.1962, S. & L. Quate, 23 ♀♀. NE NEW GUINEA: 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped, 1 ♀; Markham Val., Umi Riv., 480 m, 18-23.XI.1959, 6th Archb. Exped, 10 ♀♀.

186. ***Psychoda paraderces*** Quate, 1962, Pac. Ins. 4: 66; 1965, *ibid*, 7: 892. Fig. 82d.

DISTRIBUTION. Philippines, Borneo, New Guinea.

NW NEW GUINEA. Vogelkop, Kebar Val., 550 m, 4-31.I.1962, L. & S. Quate, 39 ♀♀, 28 ♂♂; Nabire, S of Geelvink Bay, 2-9.VII.1962, Gressitt & Sedlacek, 1 ♀; Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate, 7 ♀♀, 10 ♂♂; Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate, 29 ♀♀, 10 ♂♂; Mulik R., 10 km W of Archbold L, 1050 m, 3-5.XII.1961, L. & S. Quate, 9 ♀♀, 6 ♂♂; Sibil Val, 1245 m, 18.X-8.XI.1961, L. & S. Quate, 16 ♀♀, 20 ♂♂; Waris, S of Hollandia, 450 m, 1-7.VIII.1959, T.C. Maa, 1 ♀, 2 ♂♂. NE NEW GUINEA: Wau, 31.III.1965, W.A. Steffan, 17 ♀♀, 2 ♂♂; Wau, 17.XII.1961, L. & S. Quate, 4 ♀♀; 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped, 1 ♀, 4 ♂♂; Wampit Riv. Val., 75 km from Lae, 6.V. 1959, 6th Archb. Exped, 83 ♀♀, 96 ♂♂; Kaindi, 2050 m, 25.V.1959, 6th Archb. Exped, 1 ♀;

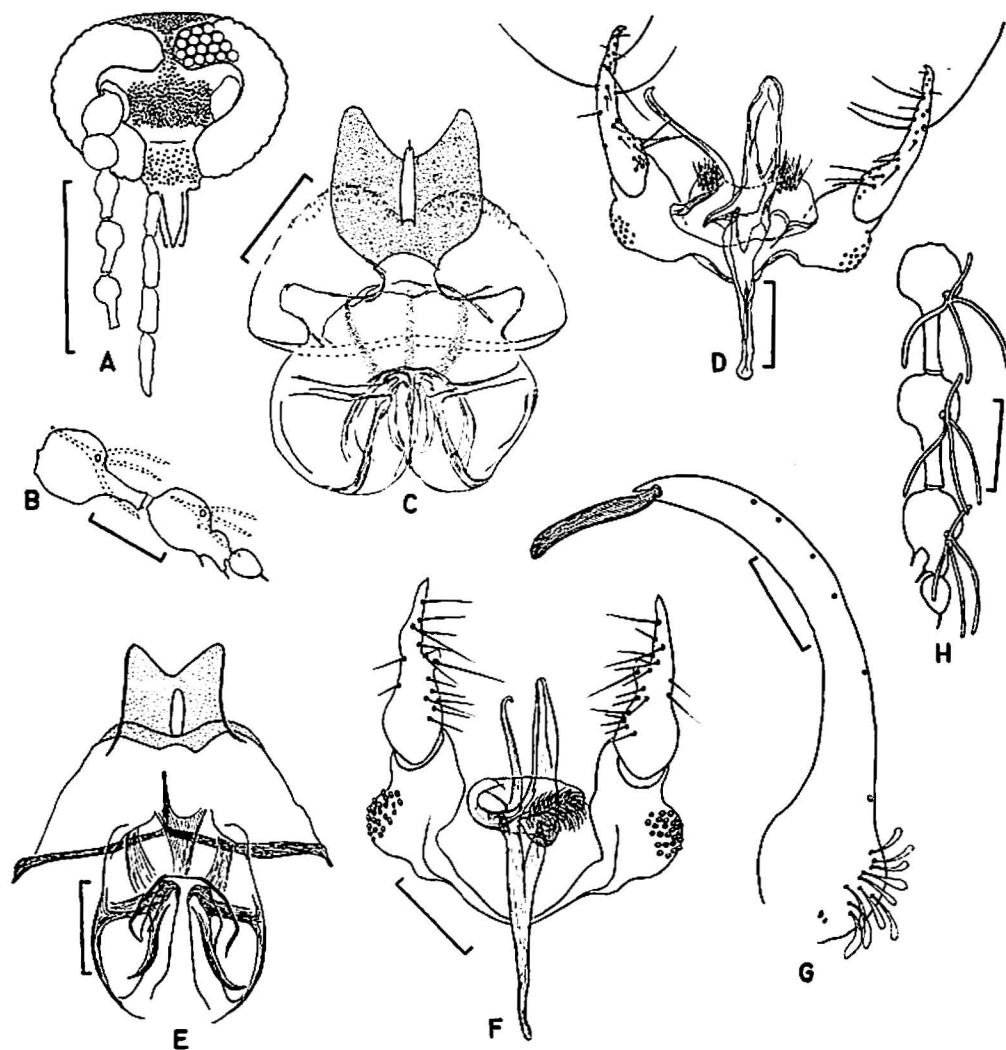


Fig. 82. a-c, *Psychoda pala*: a, ♀ head; b, ♀ antenna tip; c, ♀ genitalia. d, *Psychoda paraderces*: ♂ genitalia, dorsal. e-h, *Psychoda quadrilosa*: e, ♀ genitalia; f, ♂ genitalia, dorsal; g, ♂ surstyle; h, ♀ antenna tip. Scale line of head=0.3 mm; others 0.05 mm.

Markham Val., Umi Riv. 18-23.XI.1959, 6th Arch. Exped, 28 ♀♀, 21 ♂♂; Adelbert Mts, Wanuma, 1000 m, 23.X.1958, Gressitt, 2 ♀♀.

NEW BRITAIN. Keravat, 22.VIII.1960, L. Smee, 1 ♀.

The females of *aderces* and *paraderces* are similar in general appearance, but the structures on the internal face readily separate these two (see illus, Quate 1962). The male of *paraderces* is figured herein for the first time; it appears similar to the members of the *quadrifilis* complex, but differs from those species in New Guinea by having strong setae on both lobes of the paramere.

P. paraderces and *aderces* probably are related to the *quadrifilis* complex, as shown by the similar shape of the antenna and the 4-branched ascoids of the antennae and the male genitalia. However, neither is close enough to *quadrifilis* to be included as a member of the complex.

187. *Psychoda savaiiensis* Edwards, 1928, Ins. Samoa (Brit. Mus., Nat. Hist.), 6(2): 74.

Quate, 1962, Pac. Ins. 4: 63; 1965, *ibid*, 7: 892.

Psychoda rarotongensis Satchell, 1953, Proc. R. Ent. Soc. Lond. (B), 22:183. Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 474; 1959, Pac. Ins. 1: 439.

Psychoda lucia Quate, 1954, Proc. Haw. Ent. Soc. 15: 349.

DISTRIBUTION. Tropicopolitan.

NW NEW GUINEA. Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate; Manokwari, 21.VII.1957, D.E. Hardy; Wissel L., Itouda, 12.VIII.1955, Gressitt; Nabire, S of Geelvink Bay, 2-9.VII.1962, Gressitt & Sedlacek; Bokondini, 5-11.XI.1961, L. & S. Quate; Archbold L., 26.XI-3.XII.1961, L. & S. Quate; Swart Val., Karubaka, 12.XI.1958, Gressitt; Biak, 18.VII.1955, Gressitt. NE NEW GUINEA: Wau, 17-19.XII.1961, L. & S. Quate; 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped; Wampit Riv. Val., 75 km from Lae, 6-5.V.1959, 6th Archb. Exped; Kaindi, 25.V.1959, 6th Archb. Exped; NE slopes of Mt. Michael, Kimi Creek camp, 27-31.VIII.1959, 6th Archb. Exped; Kratke Mts., Kassam, Lae-Goroka Rd, 7-12.XI.1959, T.C. Maa & 6th Archb. Exped; Markham Val., Umi Riv. 18-23.XI.1959, 6th Archb. Exped; Wewak, 13.X.1957, Gressitt; Nondugl, 9.VII.1955, Gressitt, Adelbert Mts, Wanuma, 23.X.1958, Gressitt. PAPUA. Murua, 17-22.XII.1964, W.A. Steffan. Numerous specimens.

BOUGAINVILLE. Inis, 26.V.1959, W. Peters.

NEW BRITAIN. Linga Linga, W of Willaumez Pen., 14.IV.1956, Gressitt; Vunabakan, 10 km E of Keravat, 16.XI.1959, Maa; Keravat, 22-26.VIII.1960, L. Smee.

This widespread, common species is characterized by the 15-segmented antenna which has 4-branched ascoids in the male and Y-shaped ascoids in the female; the female subgenital plate is rounded with shallow apical indentation and a pair of rosette-like structures on the inner face of the plate and the male genitalia is distinguished by the broad main shaft of the aedeagus and the very short, sharp lateral shaft.

Psychoda quadrifilis Complex

188. *Psychoda quadrilosa* Quate and Quate, new species Fig. 82e-h.

♀. Eyes separated by about 1 facet diameter or less, interocular suture absent; vertex narrower than width of eye bridge; frons with elongate, triangular band of hair extending posteriorly to upper row of facets; ratio of palpal segments=30:30:30:45; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; segment 14 small and fused to 13, may be overlooked if appendage is shriveled, 15 free and pyriform; ascoids 4-branched. Wing forks complete, radial fork well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate bicolored, distal 1/2 brown and basal 1/2 clear, distal part parallel-sided

and ending in 2 acute lobes, apex deeply concave, genital digit long but does not extend beyond border; spermatheca rather small, less well developed than in *quadropsis*.

Antenna=0.90 mm (0.80-1.02), wing length=1.68 mm (1.52-1.82), width=0.67 mm (0.52-0.75).

♂. Eyes separated by about 1/2 facet diameter. Genitalia as figured; dististyle inflated at base and tapering to acute apex, with small protuberance on mesal face at about center, long accessory seta beyond protuberance; main shaft of aedeagus fairly broad, lateral shaft slender, curved just at apex, and ends little before apex of main shaft; surstyle of usual *Psychoda* shape except base bulbous.

Antenna=0.92-1.11 mm, wing length=1.17-1.47 mm, width=0.55-0.65 mm.

Holotype ♀, allotype ♂ (BISHOP 7352): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CISRO): 58 ♀♀, 23 ♂♂, same data as types; 4 ♀, 4 ♂ Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate; 1 ♀, Wissel Lakes, Kamo Val., Itouda, 12.VIII.1955, Gressitt. NE New Guinea: 22 ♀♀, 8 ♂♂, Wau, 31. III.1965, Steffan; 4 ♀♀, 1 ♂, Wau, 17.VI.1961, Gressitt & Sedlacek; 25 ♀♀, 3 ♂♂ Wau, 17. XII.1961, L. & S. Quate; 1 ♀, Wampit Riv. Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped; 11 ♀♀, NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27-31.VIII.1959, 6th Archb. Exped; 50 ♀♀, Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped; 67 ♀♀, 3 ♂♂, Kratke Mts, Arau, 1400 m, 10.X.1955, 6th Archb. Exped; 1 ♂, Markham Val, Umi R., 480 m, 23.XI. 1959, 6th Archb. Exped; 1 ♀, Upper Jimmi Val., Wum, 840 m, 18.VII.1955, Gressitt; 1 ♀, Kari-mui, S of Goroka, 1000 m, 3.VI.1961, Gressitt.

189. ***Psychoda quadropsis*** Quate and Quate, new species Fig. 83a-b.

♀. Eyes separated by 1-1.5 facet diameters, interocular suture absent or sometimes very faintly present; vertex small, much narrower than width of eye bridge; frons with wide median band extending to upper row of facets; ratio of palpal segments=30:30:25:35; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; segment 14 reduced and fused to 13, if antenna shriveled may be overlooked, 15 usually separated; ascoids 4-branched. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital bicolored, distal part darker than basal, distal part nearly parallel-sided with deep apical concavity, genital digit elongate and may extend beyond border; spermatheca large, elongate and conspicuous, more strongly developed than in *quadrilosa*.

Antenna=0.98 mm (0.87-1.07), wing length=1.73 mm (1.57-1.97), width=0.72 mm (0.62-0.80).

♂. Similar to ♀. Genitalia as figured; dististyle elongate, with digitiform appendage near apex, apex beak-like; main shaft of aedeagus broad with acute apex, lateral shaft straight, more slender than and ending at same level as main shaft; surstyle elongate, of usual *Psychoda* shape but with base bulbous.

Antenna=1.00 mm (0.82-1.07), wing length=1.52 mm (1.25-1.75), width=0.66 mm (0.55-0.82).

Holotype ♀, allotype ♂ (BISHOP 7353): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 40 ♀♀, 8 ♂♂, same data as types; 18 ♀♀, 15 ♂♂, Bokondini, 1300 m, 5-11.XI.1961, L. & S. Quate; 1 ♂, Archbold L, 760 m, 26.XI-3.XII.1961, L. & S. Quate; 6 ♀♀, 3 ♂♂, Mulik R, 10 km W of Archbold L., 1050 m, 3-5.XII.1961, L. & S. Quate.

190. ***Psychoda quadricornis*** Quate and Quate, new species. Fig. 83c-d

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex small, on mid-

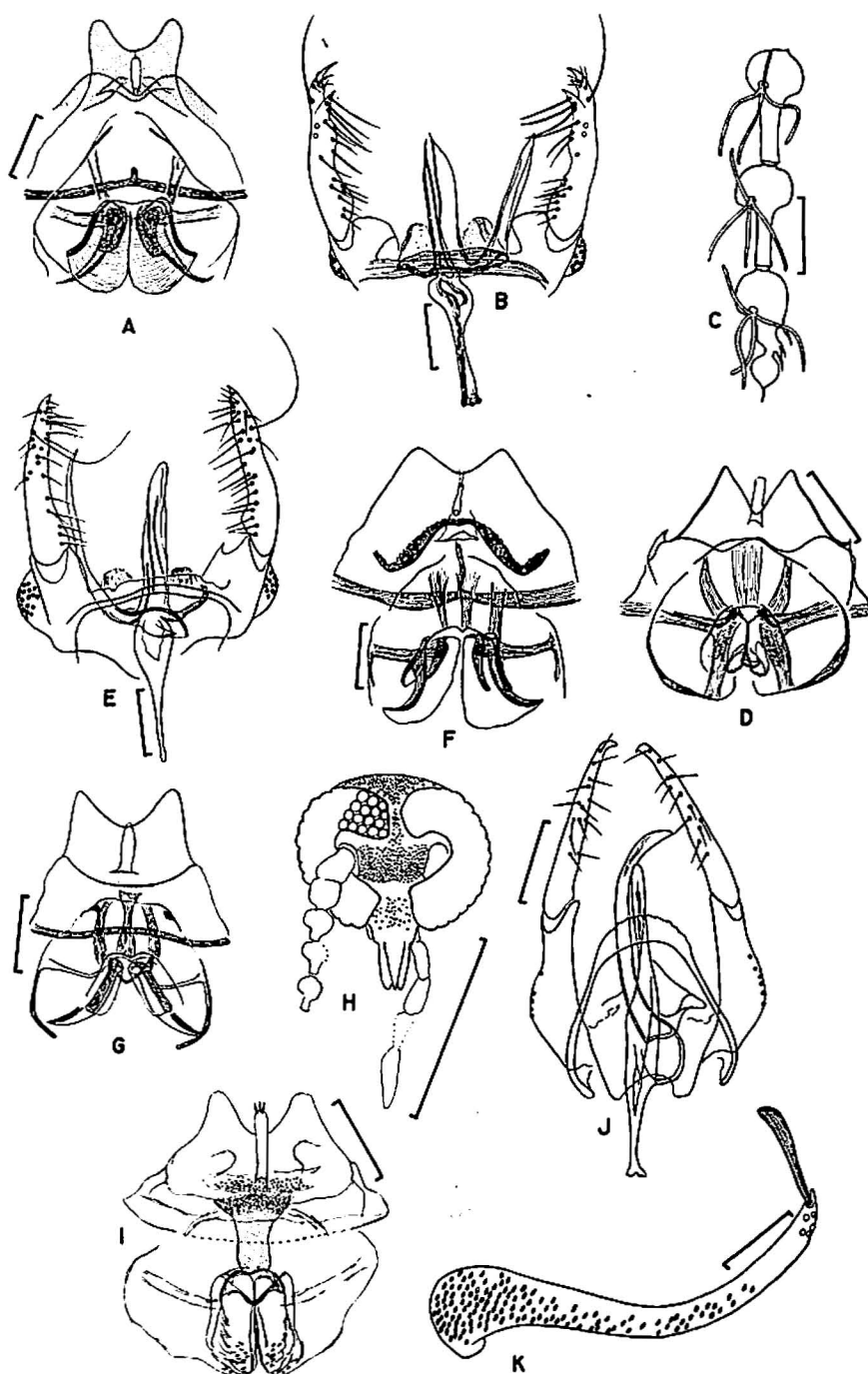


Fig. 83. a-b, *Psychoda quadropsis*: a, ♀ genitalia; b, ♂ genitalia, dorsal. c-d, *Psychoda quadricornis*, ♀: c, antenna tip; d, genitalia. e-f, *Psychoda guamensis*: e, ♂ genitalia, dorsal; f, ♀ genitalia. g, *Psychoda quadrata*, ♀ genitalia. h-i, *Psychoda nolana*, ♀: h, head; i, genitalia. j-k, *Psychoda alia*, ♂: j, genitalia, dorsal; k, surstyle. Scale line of head=0.3 mm; others=0.05 mm.

line much narrower than width of eye bridge; frons with median band extending posteriorly to upper row of facets; ratio of palpal segments=35:30:30:40; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment scarcely larger than following; segment 14 small and fused to 13, 15 free; ascoids 4-branched. Wing forks complete, but R_3 and M_2 weakened at forks, radial well distad of medial. Fore femur longer than tibia. Genitalia as figured; subgenital plate with straight, convergent sides, and deep, V-shaped notch, apical lobes acute; genital digit extends well beyond border; spermatheca small, reticulate.

Antenna=0.97 mm (0.90–1.05), wing length=1.81 mm (1.65–1.95), width=0.76 mm (0.70–0.87).

♂. Unknown.

Holotype ♀ (AMNH): NE New Guinea, Purosa camp, Okapa area, 1950 m, 20.IX.1959, 6th Archbold Exped. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 304 ♀♀, same data as types; 2 ♀♀, E slopes of Mt. Wilhelm, Pengagl Camp, 2770 m, 28.VII.1959, 6th Archb. Exped.; 1 ♀, Mt. Wilhelm, Aunde, 3600 m, I.VII.1955, Gressitt; 1 ♀, Mt. Wilhelm, Toromoburo, 2200 m, 29.VI.1955, Gressitt.

191. *Psychoda guamensis* Quate Fig. 83e–f.

Psychoda quadrifilis guamensis Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4):479.

Psychoda guamensis: Quate, 1965, Pac. Ins. 7: 892.

DISTRIBUTION. Guam, Philippines, New Guinea, New Britain, New Ireland.

NW NEW GUINEA: Hollandia, VII–XII.1961, R.T. Simon Thomas, 1 ♀; Hollandia, 22.XII.1961, L. & S. Quate, 1 ♀.

NEW BRITAIN. Gazelle Pen, Keravat, 10.IX.1955, Gressitt, 2 ♀♀; Keravat, 3.IV.1956, 22–26.VIII.1960, Gressitt & L. Smee, 4 ♀♀, 2 ♂♂. NEW IRELAND. Kavieng, 3.VI.1959, W. Peters, 1 ♀.

The above four species are a complex of closely related forms that may be combined with other related forms and referred to as “*quadrifilis* complex”. *Psychoda quadrifilis* Edwards is a species with rather wide distribution in the Pacific area and has been re-described by Quate (1959:476). In Micronesia it is subject to a good deal of variation and subspecific rankings have been applied to various segregates. In New Guinea the four forms do not appear to form subspecies and have been given full specific rank. Further studies might well show that subspecific rankings is more applicable to these forms. At the moment, the important facts are that they share with *quadrifilis* the characters of the 15-segmented antenna with reduced 14th segment, the 4-branched ascoids, similar appearing female genitalia, and a common pattern in the male genitalia, especially the shape of the male aedeagus with the bladelike lateral shaft. Differences between the species are found only in the genitalia of the various species and can be observed in the figures.

An earlier treatment of this complex from the Philippines and Ryukyus (Quate 1965, 1966) placed related forms under the name *quadrifilis*. In actuality, they should also be recognized by specific rankings, but it is inappropriate to do so here.

192. *Psychoda quadrata* Quate and Quate, new species Fig. 83 g.

♀. Eyes separated by less than 1 facet diameter, interocular suture absent; vertex small, much narrower than width of eye bridge; frons with median band extending posteriorly to upper row of facets; ratio of palpal segments=25:25:25:35; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; segment 14 small and fused to 13, may be overlooked if antenna shriveled, 15 free; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as illustrated; subgenital

plate ending in 2 acute lobes, which are separated by U-shaped concavity, genital digit long and extends beyond border of plate; spermatheca small but well defined and dorsal surface usually striate.

Antenna=0.79-0.91 mm, wing length=1.41 mm (1.25-1.70), width=0.55 mm (0.50-0.70).

♂. Unknown.

Holotype ♀ (BISHOP 7354): NW New Guinea, Archbold L., 760 m, 26.XI-3.XII.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 5 ♀♀, same data as type; 4 ♀♀, Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate; 1 ♀, Waris, S of Hollandia, 2.VIII.1959, T.C. Maa; 1 ♀, NE New Guinea, 16 km W of Lae, 26.IV.1965, Y.M. Huang & W.A. Steffan; 1 ♀, E slopes of Mt Wilhelm, Pengagl camp, 2770 m, 10.IX.1959, 6th Archb. Exped; 1 ♀, Kratke Mts, Arau, 1400 m, 22.X.1959, 6th Archb. Exped; 1 ♀, Markham Val., Umi Riv. 480 m, 23.XI.1959, 6th Archb. Exped.

193. **Psychoda nolana** Quate and Quate, new species Fig. 83h-i.

♀. Eyes separated by about 1.5 facet diameters, interocular suture absent; vertex small, much narrower than width of eye bridge; frons with median band extending posteriorly to 3rd row of facets; ratio of palpal segments=25:25:25:35; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; segment 14 small and fused to 13, may be inconspicuous if antenna shriveled, 15 free and larger than 14; ascoids Y-shaped. Wing forks complete, radial well distad of medial. Fore femur longer than tibia. Genitalia as illustrated; subgenital plate ending in 2 acute lobes which are separated by deep U-shaped notch, genital digit extends well beyond border; spermatheca somewhat quadrate; dark band caudad of spermathecae which is punctate on caudal part.

Wing length=1.27 mm, width=0.52 mm.

Holotype ♀ (BISHOP 7355): NW New Guinea, Mulik R., 10 km W of Archbold L., 1050 m, 3-5.XII.1961, light trap, S. & L. Quate.

The female subgenital plate of *nolana* resembles that of *sectiga* in a superficial way, but, of course, the latter species differs markedly in a number of respects, but particularly in having 16-segmented antennae. The shape of the subgenital plate and the bar which is caudad of the spermathecae will separate *nolana* from other New Guinea *Psychoda* with 15-segmented antennae.

194. **Psychoda alia** Quate, 1962, Pac. Ins. 4: 61; 1965, *ibid*, 7: 886. Fig. 83j-k.

DISTRIBUTION. Philippines, Borneo, New Guinea.

NW NEW GUINEA. Bokondini, 5-11.XI.1961, L. & S. Quate, 72 ♀♀, 34 ♂♂; Hablifuri R, SE of Bokondini, 25.XI.1961, L. & S. Quate, 4 ♀♀; Archbold L, 26.XI-3.XII.1961, L. & S. Quate, 11 ♀♀; Mulik Riv, 10 km W of Archbold L, 3-5.XII.1961, L. & S. Quate, 17 ♀♀; Sibil Val., 18.X-8.XI.1961, L. & S. Quate, 18 ♀♀, 2 ♂♂; Swart Val., Karubaka, 12.XI.1958, Gressitt, 1 ♀. NE NEW GUINEA: Wau, 31.III.1965, W.A. Steffan and 18.XII.1961, L. & S. Quate, 9 ♀♀, 3 ♂♂; Wampit Riv Val., 75 km from Lae, 6.V.1965, 6th Archb. Exped, 3 ♀♀; Kaindi, 25.V.1959, 6th Archb. Exped, 6 ♀♀; S slopes of Mt. Otto, Kotoni, 10.VIII.1959, 6th Archb. Exped, 5 ♀♀; Mt Otto, 2200 m, 24.VI.1955, Gressitt, 1 ♀; NE slopes of Mt. Michael, Kimi Creek camp, 27-31.VIII.1959, 6th Archb. Exped, 2 ♀♀; Okapa area, Purosa camp, 1950 m, 29.IX.1959, 6th Archb. Exped, 3 ♀♀.

The females of *alia* are distinguishable from other members of *alternata* complex by the parallel-sided apical lobes of the subgenital plate which are separated by a narrow, V-shaped notch.

Males have been associated with the females of *alia* on their coincidence of distribution and similarity in wing venation; they agree in all nonsexual characters with the females. The male genitalia,

herein illustrated in fig. 83 j,k, are characterized by the long lateral shaft of the aedeagus which extends beyond the tip of the main shaft and gracefully curves inward on its distal part; the coxites are rather slender and taper to an acute apex.

195. ***Psychoda pseudalternata*** Williams, 1946, Proc. Haw. Ent. Soc. 12: 637.—Quate, 1954, *ibid*, 15: 345.—Satchell, 1953, Austr. J. Zool 1: 372 (♂ descr.); 1954, Trans. R. Ent. Soc. Lond. 105: 478.

DISTRIBUTION. Hawaii, New Guinea, Australia, New Zealand.

NE NEW GUINEA. NE slopes of Mt. Michael, Kimi Creek camp, 27–31.VIII.1959, 6th Archb. Exped, 2 ♀♀; Wahgi Val., Banz, 10.VII.1955, Gressitt, 1 ♀; W Highlands, Baiyer R, 1150 m, 18.X.1958, Gressitt, 1 ♀.

This species has an unusual distribution from Hawaii to Australia, which is probably due to commercial transport. While never abundant, *pseudalternata* has become established in widely separated localities. There can be no question as to the identity of this species, since the distinctive, rod-like subgenital plate of the female is highly characteristic and quite unlike that of other species of the *alternata* complex.

196. ***Psychoda alternata*** Say.—Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 469; 1962, Pac. Ins. 4: 59; 1965, *ibid*, 7: 886.

DISTRIBUTION. Cosmopolitan.

NW NEW GUINEA. Vogelkop, Kebar Val, 4–31.I.1962, L. & S. Quate; Manokwari, 19.VII.1957, D.E. Hardy; Nabire, S of Geelvink Bay, 2–9.VII.1962, Gressitt & Sedlacek; Hollandia, 2.XII.1962, reared, larva ex scum in open drain, S. Quate. NE NEW GUINEA: Wau, 17–19.XII.1961, L. & S. Quate; Wampit Riv. Val., 75 km from Lae, 6–5.V.1959, 6th Archb. Exped; Kainantu, 20–26.X.1959, T.C. Maa; Madang, 24–28.XI.1964, W.A. Steffan. PAPUA: Murua, 17–22.XII.1964, Steffan. Numerous specimens.

NEW BRITAIN. Keravat, 22–26.VIII.1960, L. Smee.

NEW IRELAND. Kavieng, 3.VI.1959, W. Peters.

197. ***Psychoda acanthostyla*** Tokunaga, 1957, Saikyo Univ. Agric. Sci. Rpts. 9:53.—Quate, 1965, Pac. Ins. 7:886.

DISTRIBUTION. India, Malaya, Taiwan, Ryukyus, Philippines, Borneo, Mariana Is, Caroline Is, New Guinea, New Ireland.

NW NEW GUINEA: Vogelkop, Kebar Val., 4–31.I.1962, S. & L. Quate, 4 ♀♀, 1 ♂; Bokondini, 16–23.XI.1961, S. & L. Quate, 1 ♀; Mulik Riv. 10 km W of Archbold L., 3–5.XII.1961, S. & L. Quate, 1 ♀; Biak, 17.VII.1957, D.E. Hardy, 2 ♂♂. NE NEW GUINEA: Kratke Mts., Kassam, Lae-Goroka Rd, 12.XI.1959, 6th Archb. Exped, 1 ♀. PAPUA: Murua, 17–22.XII.1964, Steffan, 2 ♀♀; Daradae, near Javerere, Musgrave R, 3.X.1958, Gressitt, 1 ♂.

NEW IRELAND. Kavieng, 3.VI.1959, W. Peters, 1 ♀.

198. ***Psychoda vagabunda*** Quate, 1962, Pac. Ins. 4: 61; 1962, *ibid*, 4: 232; 1962, Proc. Haw. Ent. Soc. 18: 186; 1965, Pac. Ins. 7: 887.

Psychoda formosiensis: Quate (not Tokunaga), 1962, Pac. Ins. 4: 59, ♂♂ only.

DISTRIBUTION. India, Malaya, Philippines, Borneo, New Guinea, New Britain.

NW NEW GUINEA: Vogelkop, Kebar Val., 4–31.I.1962, L. & S. Quate, 53 ♀♀, 10 ♂♂; Wissel L, Kamo Val., Itouda, 12.VIII.1955, J.L. Gressitt, 2 ♀♀; Bokondini, 5–11.XI.1961, L. & S. Quate, 19 ♀♀, 7 ♂♂; Mulik Riv, 10 km W of Archbold L., 3–5.XII.1961, L. & S. Quate, 3 ♀♀; Sibil Val., 18.X–8.XI.1961, L. & S. Quate, 6 ♀♀, 4 ♂♂; Hollandia, 28.II.1960, T.C. Maa, 1 ♀; Japen I., Sumberbaba, Dawai Riv., 26.X.1962, N. Wilson, 1 ♀. NE NEW GUINEA: Wau, 31.

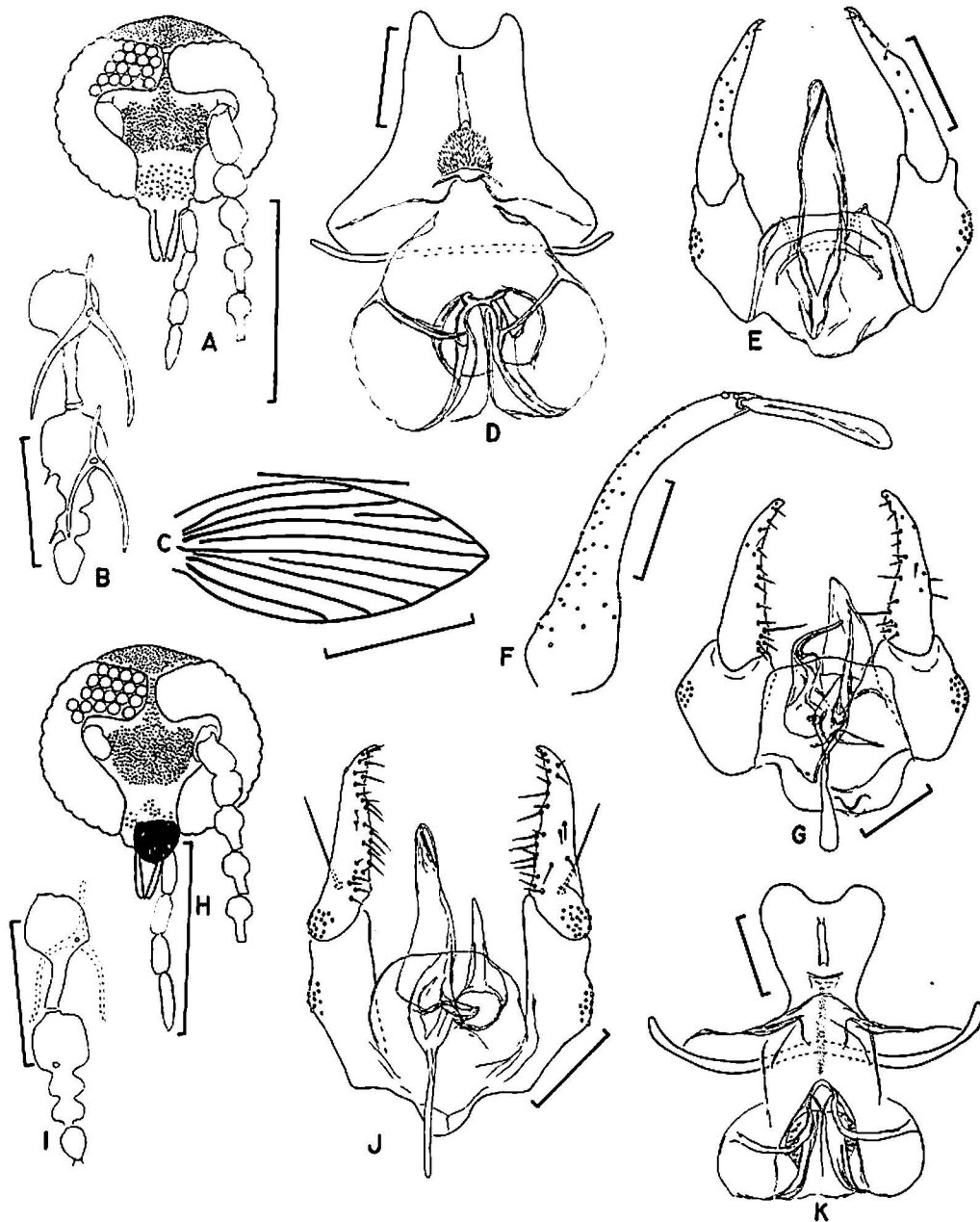


Fig. 84. a-f, *Psychoda rhipsalis*: a, ♀ head; b, ♀ antenna tip; c, ♀ wing; d, ♀ genitalia; e, ♂ genitalia, dorsal; f, ♂ surstyle. g, *Psychoda makati*: ♂ genitalia, dorsal. h-k, *Psychoda ablucens*: h, ♀ head; i, ♀ antenna tip; j, ♂ genitalia, dorsal; k, ♀ genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

III.1965, W.A. Steffan, 1 ♂; 37 km W of Lae, Lae-Bulolo Rd., 28.IV.1959, 6th Archb. Exped., 6 ♀♀, 4 ♂♂; Lae, 6.VII.1957, D.E. Hardy, 2 ♀♀, 4 ♂♂.

NEW BRITAIN. Linga Linga Pl'n, W of Willaumez Pen., 11.IV.1956, Gressitt, 1 ♀.

The female genitalia of *vagabunda* is characteristic and recognized by the parallel-sided lobes of the subgenital plate and its wide base.

In a study of Borneo Psychodidae (Quate 1962) three males were associated with another member of the *alternata* complex, *formosiensis* Tokunaga. A number of these males have been found in New Guinea and in nearly all instances they are associated with the females of *vagabunda* and no females of *formosiensis* have been found in New Guinea. It therefore appears that these males are properly to be associated with *vagabunda* and not with *formosiensis*. Thus, the male figured in an earlier paper (Quate 1962: Fig. 26C) is the male of *vagabunda* and not *formosiensis*. It should be added that the surstyle of the male is unusually long and slender and with distinct curve near the center.

199. ***Psychoda platilobata*** Tokunaga, 1957, Saikyo Univ. Agric. Sci. Rpt. 9: 65.—Quate, 1959, Pan-Pac. Ent. 35: 214; 1962, Pac. Ins. 4: 65; 1965, *ibid*, 7: 88 (illus. ♀, ♂).

DISTRIBUTION. Taiwan, Philippines, Borneo, New Guinea, Jamaica, Trinidad.

NW NEW GUINEA. Vogelkop, Kebar Val., 450 m, 4-31.I.1962, S. & L. Quate, 3 ♀♀, 1 ♂; Bokondini, 1300 m, 16-23.XI.1961, S. & L. Quate, 7 ♀♀, 1 ♂; Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate, 1 ♂, 3 ♀♀; Mulik R., 10 km W of Archbold L., 1050 m, 3-5.XII.1961, S. & L. Quate, 1 ♀; Sibil Val., 1245 m, 18.X-8.XI.1961, S. & L. Quate, 1 ♀.

The female subgenital plate of *platilobata* is broad and weakly bilobed and with several diagonal grooves on the inner face below the genital digit and the basal antennal ascoids have the branches atrophied and appear amoeboid; the male genitalia are not outstanding but nonetheless characteristic with their thin tapering dististyle and the rather broad main shaft of the aedeagus which is of distinctive shape. The genitalia of both sexes have been illustrated in a previous publication (Quate 1965). The spots at the vein tips and the structure of the antennal tip might cause this species to be confused with the *alternata* complex, but the genitalia of both sexes show strong divergences from those species and the resemblance is regarded as accidental or convergent.

200. ***Psychoda yapensis*** Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 474; 1959, Pac. Ins. 1: 438.

DISTRIBUTION. Caroline Is, Samoa, New Britain.

NEW BRITAIN. Linga Linga Pl'n, W of Willaumez Pen., 11.IV.1956, light trap, Gressitt, 39 ♀♀, 6 ♂♂.

This species is not difficult to recognize based on the 14-segmented antenna and the structure on the inner face of the female subgenital plate which is shaped like a horse-collar, and the male genitalia with the digitiform protuberance at about the center of the dististyle.

The distribution of *yapensis* is unusual. It is an oceanic species which extends to New Britain but apparently has not become established in New Guinea. Possibly this indicates that the species has evolved on one of the Pacific islands and is now moving westward. Since it is a fairly common species in its area of occurrence and easily collected by routine methods employed by most field collectors, it is reasonable to assume that the absence from New Guinea is a true picture of its distribution. It will be interesting to observe if the species at a later date becomes established there.

201. ***Psychoda caudata*** Quate, 1962, Pac. Ins. 4: 68; 1965, *ibid*, 7: 896.

DISTRIBUTION. Philippines, Borneo, New Guinea.

NW NEW GUINEA: Vogelkop, Kebar Val., 4-31.I.1962, light trap, S. & L. Quate, 39 ♀♀;

Bokondini, 16-23.XI.1961, S. & L. Quate, 1 ♀. NE NEW GUINEA: 37 km W of Lae, Lae-Bulolo Rd., 28.IV.1959, 6th Archb. Exped., 4 ♀♀; Wampit Riv. Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped., 3 ♀♀; Wampit Val., near Gurakor, 7.VII.1957, D.E. Hardy, 1 ♀.

The fishtail-shaped subgenital plate of the female, in combination with the 16-segmented antenna and the incomplete wing forks, separate *caudata* from related New Guinea species. Associated with the females from Kebar Val., are a number of males. They seem to agree with the females in nonsexual characters and it seems probable that these belong to the same species as the females of *caudata*. However, these males do not agree with the males associated with the females in Borneo and originally described as *caudata*. No further conclusions can be drawn at this time, but future workers should be aware that this raises the question of the proper association of the sexes in *caudata*.

202. ***Psychoda rhipsalis*** Quate and Quate, new species Fig. 84a-f.

♀. Eyes separated by about 1/2 facet diameter, interocular suture absent; vertex small, narrower on midline than width of eye bridge; frons with median band of hairs extending posteriorly to 3rd row of facets; ratio of palpal segments=25:23:20:26; labellum with 3 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment little larger than following; segment 14 partly fused to 13 and 15, 16 free; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate elongate, with straight sides slightly convergent, genital digit long but does not quite extend to border and arises from a small setose dome, inner basal margin with rectangular emargination on midline in front of digit; spermatheca circular.

Antenna=0.88-0.91 mm, wing length=1.20-1.55 mm, width=0.42-0.60 mm.

♂. Similar to ♀. Genitalia as figured; dististyle simple, tapering to acute apex; aedeagus simple, consisting only of main shaft without lateral shaft, base very short, apically twisted and forming a loop at apex.

Antenna=0.82-0.88 mm, wing length=1.07-1.27 mm, width=0.42-0.52 mm.

Holotype ♀, allotype ♂ (BISHOP 7356): NW New Guinea, Vogelkop, Kebar Val., 4-31.I.1962, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 4 ♀♀, 8 ♂♂, same data as types.

203. ***Psychoda makati*** del Rosario, 1936, Philip. J. Sci. 59: 568,—Satchell, 1953, Austral J. Zool. 1: 372.—Tokunaga, 1957, Saikyo Univ. Agric. Sci. Rpt. 9: 58.—Quate, 1962, Pac. Ins. 4: 68, 231; 1965, *ibid*, 7: 896. Fig. 84g.

Psychoda infurcis Satchell, 1950, Proc. R. Ent. Soc. Lond., Ser. B, 19: 180.

DISTRIBUTION. India, Malaya, Borneo, Philippines, Taiwan, New Guinea, Australia, Fiji, Samoa, Cook Is.

NW NEW GUINEA: Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate, 161 ♀♀, 13 ♂♂; Vogelkop, Manokwari, 21.VII.1957, D.E. Hardy, 5 ♀♀, 1 ♂; Swart Val., Karubaka, 12.XI.1958, J.L. Gressitt, 1 ♂. NE NEW GUINEA: Wampit Riv. Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped., 96 ♀♀, 6 ♂♂; Baitabag, 14 km N of Madang, 1.XII.1964, Steffan, 7 ♂♂. PAPUA: Murua, 17-22.XII.1964, Steffan, 1 ♀.

The heart-shaped female subgenital plate and the male aedeagus with the peculiar curvature in the center distinguishes *makati* from most other species of *Psychoda* with incomplete wing forks and 16-segmented antennae.

204. ***Psychoda ablucens*** Quate and Quate, new species Fig. 84h-k.

♀. Eyes separated by 1/2-1 facet diameter, interocular suture absent; vertex small, much narrower on midline than width of eye bridge; frons with narrow, triangular median band of hairs extending posteriorly to upper row of facets; ratio of palpal segments=30:27:23:37; labellum with

4 teeth and 2 spines. Antenna 16-segmented; node of 1st flagellar segment larger than following; segments 13, 14, 15 partly fused, 16 separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia; hind femur subequal to or shorter than tibia. Genitalia as illustrated; subgenital plate heart-shaped and with small base lacking flaps on sides; spermatheca elongate, lightly reticulate.

Antenna=0.80 mm (0.68–1.01), wing length=1.33 mm (1.12–1.72), width=0.54 mm (0.45–0.67).

♂. Similar to ♀; eyes separated by less than 1 facet diameter. Genitalia as figured; main shaft of aedeagus simple, a little curved in center, and tapering to acute apex, lateral shaft short, and sharply pointed; surstyle of usual *Psychoda* shape.

Antenna=0.94 mm (0.84–1.07), wing length=1.32 mm (1.17–1.50), width=0.55 mm (0.50–0.62).

Holotype ♀, allotype ♂ (BISHOP 7357): NW New Guinea, Vogelkop, Kebar, Val., 550 m, 4–31.I.1962, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 91 ♀♀, 19 ♂♂, same data as types.

This species is similar to *makati* but is easily separable by characters of the genitalia. The female genitalia of *ablucens* has a heart-shaped subgenital plate, as in *makati*, but lacks the flaps on the sides of the subgenital plate which is characteristic of *makati*; the male genitalia of *ablucens* lacks the peculiar curvature in the center of the aedeagus which is the most conspicuous feature of the male genitalia of *makati*.

205. ***Psychoda bitrunculens*** Quate and Quate, new species Fig. 85a–e.

♀. Eyes separated by 1 facet diameter, interocular suture absent; vertex small, little narrower on midline than width of eye bridge; frons with triangular band of hair extending posteriorly to upper row of facets; ratio of palpal segments=27:25:23:35; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment little larger than following; terminal 2 segment separated, 15 little smaller than 14; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with 2, oblique, truncate, apical lobes separated by wide concavity, inner face with pair of setose lobes on either side of genital digit, at base of plate pair of rosette-like or setose, rounded areas; spermathecae circular but with median bar extending cephalad of main part.

Antenna=0.90 mm (0.78–1.01), wing length=1.59 mm (1.42–1.70), width=0.57 mm (0.52–0.67).

♂. Similar to ♀; eyes separated by about 1/2 facet diameter. Genitalia as figured; dististyle tapering to acute apex and distinctly curved at about apical 1/3; aedeagus straight and simple, without lateral shaft; paramere a truncated, setose lobe; surstyle of usual *Psychoda* shape.

Antenna=0.95–1.05 mm, wing length=1.42–1.55 mm, width=0.57–0.62 mm.

Holotype ♀, allotype ♂ (BISHOP 7358): NW New Guinea, Sibil Val., 1245 m, 18.X–8.XI. 1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 42 ♀♀, 9 ♂♂, same data as types.

The female genitalia of *bitrunculens*, with its pair of truncated lobes on the subgenital plate and the rosette-like structures on the inner face is quite distinctive and unlike other *Psychoda*; the male is similar to *innotabilis* and the main difference between the two is the shape of the male paramere—in *bitrunculens* the sides of the paramere are parallel but in *innotabilis* the sides are convergent.

206. ***Psychoda brassi*** Quate and Quate, new species Fig. 85f–j.

♀. Eyes separated by about 1/2 facet diameter, interocular suture absent; vertex small, nar-

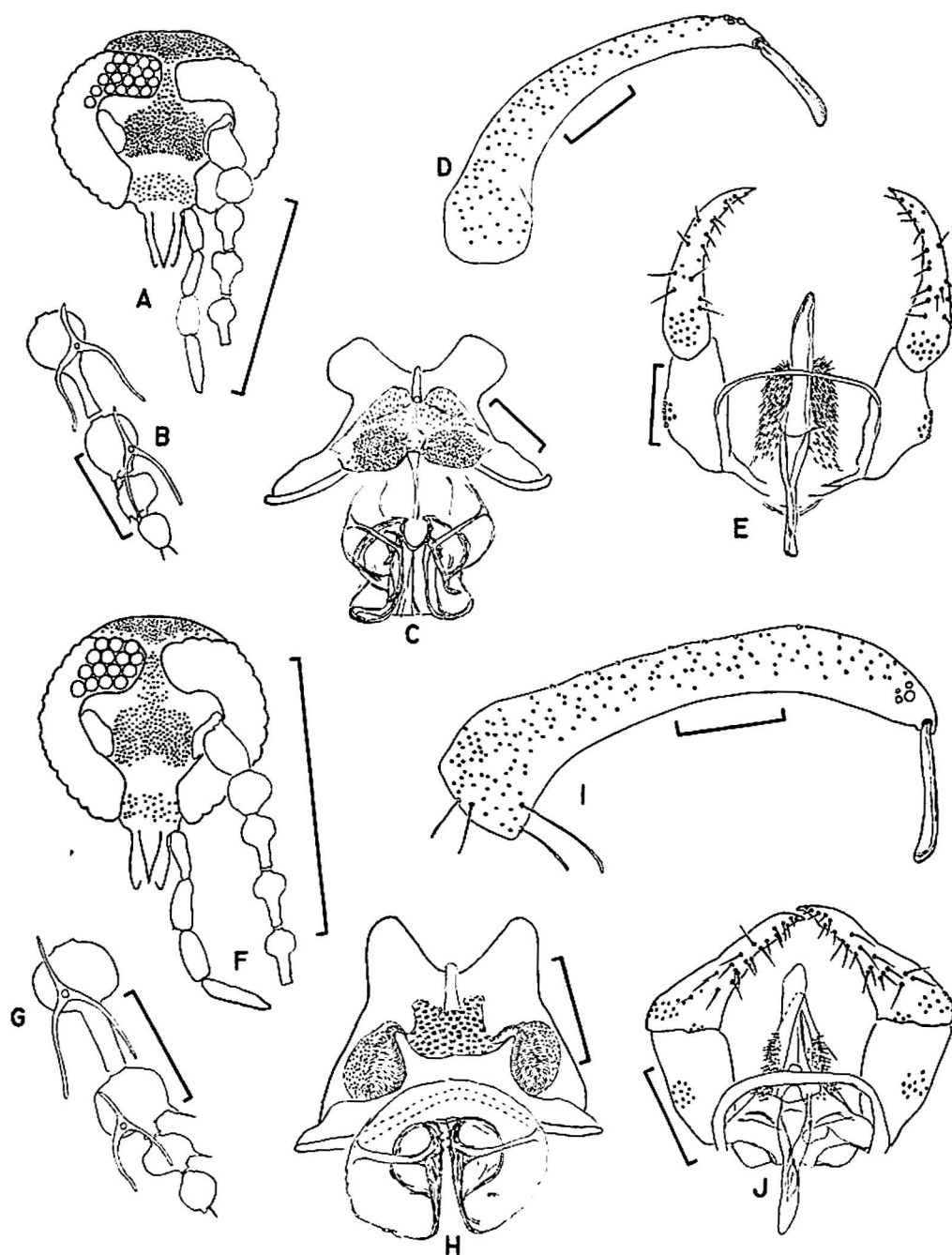


Fig. 85, a-e, *Psychoda bitrunculens*: a, ♀ head; b, ♀ antenna tip; c, ♀ genitalia; d, ♂ surstyle; e, ♂ genitalia, dorsal. f-j, *Psychoda brassi*: f, ♀ head; g, antenna tip; h, ♀ genitalia; i, ♂ surstyle; j, ♂ genitalia, dorsal. Scale lines of heads=0.3 mm; others=0.05 mm.

rower than width of eye bridge; frons with elongate median band of hairs extending posteriorly to 3rd row of facets; ratio of palpal segments=23:28:25:32; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment little larger than following terminal 2 segments subequal in size and separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with sides convergent at base and parallel distally, lobes separated by broad V-shaped notch, inner face with truncate, setose lobe at base of digit, pair of ovoid rosette-like or setose patches near base.

Antenna=0.74–0.92 mm, wing length=1.43 mm (1.25–1.60), width=0.55 mm (0.47–0.65).

♂. Similar to ♀. Genitalia as figured; dististyle enlarged basally and tapering to acute apex; aedeagus simple, without lateral shaft; paramere cone-shaped, setose only near base and on sides; surstyle larger than usual in *Psychoda*.

Antenna=0.89 mm, wing length=1.25–1.47 mm, width=0.45–0.60 mm.

Holotype ♀, allotype ♂ (AMNH): NE New Guinea, Okapa area, Purosa Camp, 1950 m, 29. IX.1959, L.J. Brass, 6th Archbold Exped. Paratypes (BISHOP, AMNH): 20 ♀♀, 3 ♂♂, same data as types; 2 ♀♀, NW New Guinea, Sibil Val., 1245 m, 18.X–8.XI.1961, light trap, S. & L. Quate.

We take pleasure in dedicating this species to Mr L.J. Brass in recognition of his contribution to biological studies in New Guinea through his leadership of the Archbold Expeditions.

207. ***Psychoda floropsis*** Quate and Quate, new species Fig. 86a–e.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex small, much narrower on midline than width of eye bridge; frons with median band extending posteriorly only to 3rd row of facets; ratio of palpal segments=22:24:22:31; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; terminal 2 segments subequal in size and separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate longer than wide, sides slightly divergent, apex with rounded concavity, pair of contiguous rosette-like structures on inner face near base.

Antenna=0.67–0.87 mm, wing length=1.43 mm (1.22–1.70), width=0.56 mm (0.45–0.67).

♂. Similar to ♀; eyes separated by less than 1 facet diameter. Genitalia as figured; dististyle enlarged at base and tapering to acute apex with curve at about distal 1/3; aedeagus simple, without lateral shaft; paramere conical with acute apex, entirely bare; surstyle larger than usual for *Psychoda*.

Antenna=0.83 mm (0.71–1.04), wing length=1.27 mm (1.02–1.60), width=0.51 mm (0.40–0.67).

Holotype ♀, allotype ♂ (BISHOP 7359): NW New Guinea, Bokondini, 1300 m, 16–23.XI.1961, Malaise trap and light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 3 ♀♀, 12 ♂♂, same data as types; 4 ♂♂, Vogelkop, Kebar Val., 4–31.I.1962, L. & S. Quate; 2 ♂♂, Swart Val., Karubaka, 12.XI.1958, J.L. Gressitt; 1 ♂, Archbold L., 26.XI–3.XII.1961, L. & S. Quate; 15 ♂♂, Sibil Val., 18.X–8.XI.1961, L. & S. Quate. NE New Guinea: 3 ♀♀, 2 ♂♂, S slopes of Mt Otto, Kotoni, 2200 m, 10.VII.1959, 6th Archb. Exped; 3 ♀♀, Mt. Otto, 2200 m, 24.VI.1955, Gressitt; 7 ♀♀, 8 ♂♂, NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27–31.VIII.1959, 6th Archb. Exped; 14 ♀♀, 5 ♂♂, Okapa area, Purosa camp, 29.IX.1959, 6th Archb. Exped; 3 ♀♀, Kabebe, 24.VI.1955, Gressitt; 1 ♀, Numbu, Upper Chimbu Val., 2400 m, 5.VII.1955, Gressitt; 4 ♂♂, Adelbert Mts., Wanuma, 1000m, 23.X.1958, Gressitt.

208. ***Psychoda duaspica*** Quate and Quate, new species Fig. 86f–h.

♀. Eyes separated by about 2/3 facet diameter, interocular suture absent; vertex small, nar-

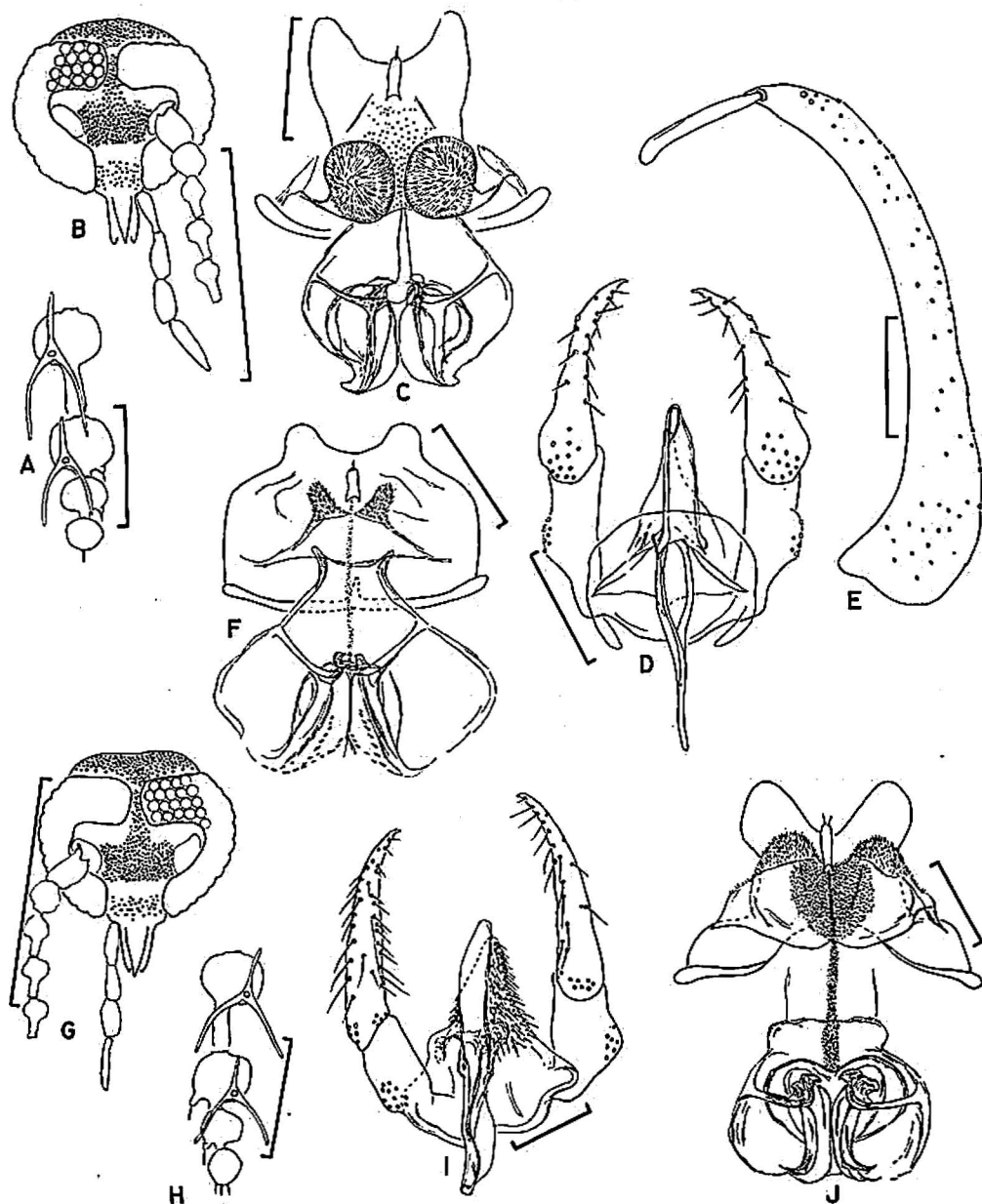


Fig. 86. a-e, *Psychoda floropsis*: a, ♀ antenna tip; b, ♀ head; c, ♀ genitalia; d, ♂ genitalia, dorsal; e, ♂ surstyle. f-h, *Psychoda duaspica*, ♀: f, genitalia; g, head; h, antenna tip. i-j, *Psychoda mediocris*: i, ♂ genitalia, dorsal; j, ♀ genitalia. Scale lines of head=0.3 mm; others=0.05 mm.

rower on midline than width of eye bridge; frons with median band extending posteriorly to 3rd row of facets; ratio of palpal segments=20:20:19:26; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment little larger than following; terminal 2 segments subequal in size and separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with broad base and pair of rather small apical lobes, inner face with pair of small, protuberant, setose lobes at base of genital digit; ventral plate of spermatheca with pair of acute points on caudal margin.

Antenna=0.66-0.76 mm, wing length=1.20-1.42 mm, width=0.50-0.52 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7360): NW New Guinea, Bokondini, 1300 m, 16-23.XI.1961, Malaise trap, S. & L. Quate. Paratypes (BISHOP, USNM, BMNH, CSIRO): 6 ♀♀, same data as type; 1 ♀, Mulik R, 10 km W of Archbold L, 1050 m, 3-5.XII.1961, S. & L. Quate.

209. *Psychoda mediocris* Quate, Ins. Micronesia 12(4): 468; 1962, Pac. Ins. 4: 72; 1965, *ibid*, 7: 900. Fig. 86i-j.

DISTRIBUTION. India, Borneo, Philippines, Caroline Is, New Guinea.

NW NEW GUINEA: Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate, 18 ♀♀, 15 ♂♂; Vogelkop, Manokwari, 21.VII.1957, D.E. Hardy, 2 ♀♀; Bokondini, 5-11, XI.1961, L. & S. Quate, 2 ♀♀, 2 ♂♂; Swart Val., Karubaka, 12.XI.1958, Gressitt, 2 ♀♀; Biak, 28.VII.1965, Gressitt, 1 ♀; same, 13.IX.1944, 1 ♂; Hollandia, XII.1961, R.T. Simon Thomas, 2 ♀♀, 2 ♂♂; Hollandia-Binnen, 24.XI.1958, Gressitt, 6 ♂♂. NE NEW GUINEA: Lae, 6.VII.1957, Hardy, 8 ♂♂; 15 km W of Lae, 17.IV.1965, W.A. Steffan, 4 ♀♀; 37 km W of Lae, 28.IV.1959, 6th Archb. Exped, 21 ♀♀, 3 ♂♂; Wampit Riv. Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped. 10 ♀♀, 1 ♂; Sepik Distr., Dreikikir, 25.VI.1961, Gressitt, 1 ♀; Adelbert Mts., Wanuma, 23.X.1958, Gressitt, 3 ♀♀, 2 ♂♂.

NEW BRITAIN. Keravat, 22-26.VIII.1960, L. Smee, 4 ♀♀, 4 ♂♂; same, 3.IV.1956, Gressitt, 2 ♂♂; Linga Linga Pl'n, W of Willaumez Pen, 14.IV.1956, Gressitt, 19 ♀♀, 1 ♂; Volupai, Willaumez Pen., 17.IV.1956, Gressitt, 1 ♀.

210. *Psychoda absidata* Quate and Quate, new species Fig. 87a-c.

♀. Eyes separated by less than 1/2 facet diameter; vertex very small, height on midline less than width of eye bridge; frons with elongate triangular median band extending posteriorly to 3rd row of facets; ratio of palpal segments=20:20:20:24; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; segment 14 fused to 13, 15 free; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with straight, sloping, convergent sides and rounded apical concavity, setose areas on either side of genital digit, base of plate cleft at midline, area of reticulation beyond cleft; spermatheca elongate and lightly reticulate.

Antenna=0.72 mm (0.68-0.80), wing length=1.31 mm (1.15-1.45), width=0.53 mm (0.45-0.62).

♂. Unknown.

Holotype ♀ (BISHOP 7361): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 24 ♀♀, same data as types; 1 ♀, Vogelkop, Manokwari, 21.VII.1957, D.E. Hardy.

211. *Psychoda innotabilis* Quate, 1962, Pac. Ins. 4: 72; 1965, *ibid*, 7: 900; 1966, *ibid*, 8: 313. DISTRIBUTION. Ryukyu, Philippines, Borneo, New Guinea.

NW NEW GUINEA: Kebar Val., 4-31.I.1962, L. & S. Quate, 29 ♀♀, 48 ♂♂; Manokwari,

21.VII.1957, D.E. Hardy, 2 ♀♀; Wissel L., Kamo Val., Urapura, 15.VIII.1955, Gressitt, 1 ♀; Bokondini, 5-11.XI.1961, L. & S. Quate, 32 ♀♀, 34 ♂♂; Baliem Val., Wamena, 18.II.1960, Maa, 1 ♀; Swart Val., Karubaka, 12.XI.1958, Gressitt, 7 ♀♀, 7 ♂♂; Hablifuri Riv, SE of Bokondini, 25.XI.1961, L. & S. Quate, 2 ♀♀; Hollandia, 22.XII.1961, L. & S. Quate, 7 ♂♂. NE NEW GUINEA: Wau, 31.III.1965, Steffan, 22 ♀♀, 2 ♂♂; Wau, 17-19.XII.1961, L. & S. Quate, 31 ♀♀, 3 ♂♂; 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped, 1 ♀; Wampit Riv Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped, 2 ♀♀, 1 ♂; NE slopes of Mt. Michael, Kimi Creek camp, 27-31.VIII.1959, 6th Archb. Exped, 8 ♀♀, 5 ♂♂; Okapa area, Purosa camp, 29.IX.1959, 6th Archb. Exped, 18 ♀♀, 1 ♂; Kratke Mts., Arau, 10.X.1959, 6th Archb. Exped, 12 ♀♀, 2 ♂♂; Kratke Mts., Kassam, 7.XI.1959, Maa, 1 ♂; Markham Val., Umi Riv, 23.XI.1959, 6th Archb. Exped, 26 ♀♀, 51 ♂♂; Karimui, S of Goroka, 3 VI.1961, Gressitt, 2 ♀♀; Upper Jimmi Val., Tsenga, 15.VII.1955, Gressitt, 1 ♂, 1 ♀; Adelbert Mts, Wanuma, 23.X.1958, Gressitt,

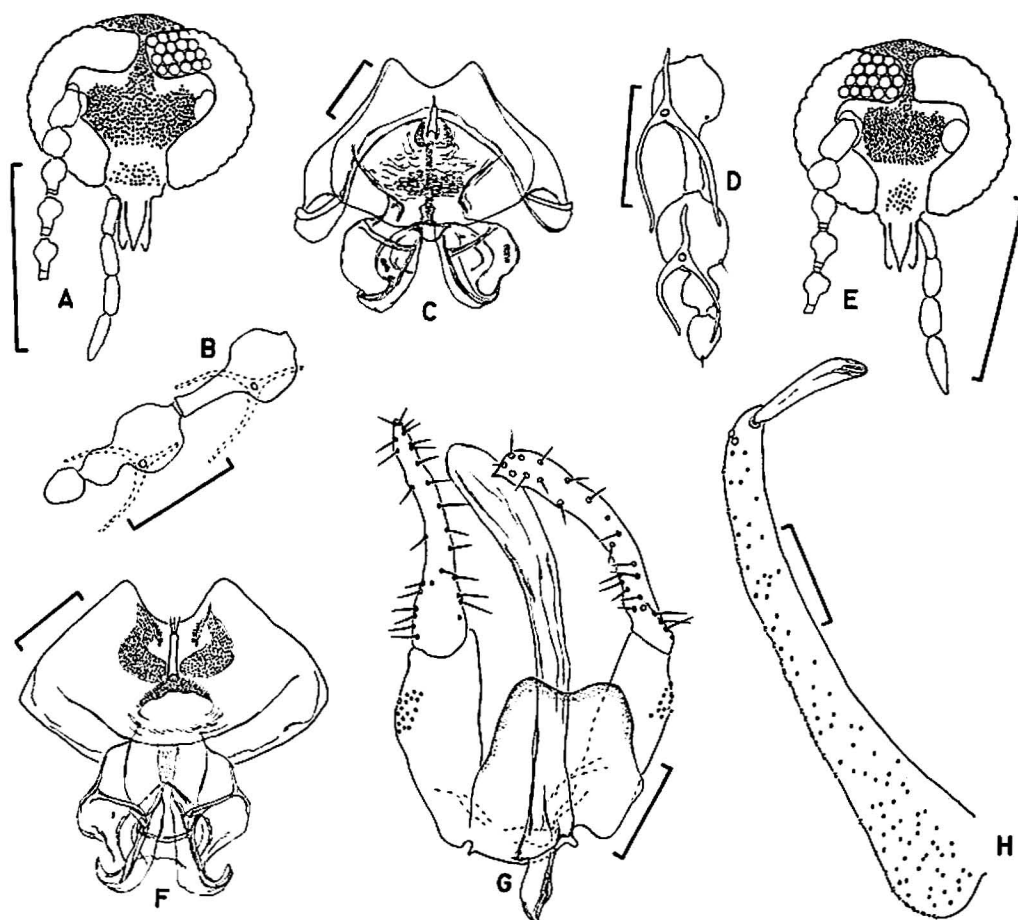


Fig. 87. a-c, *Psychoda absidata*, ♀: a, head; b, antenna tip; c, genitalia. d-h, *Psychoda pingicula*: d, ♀ antenna tip; e, ♀ head; f, ♀ genitalia; g, ♂ genitalia, dorsal; h, ♂ surstyle. Scale lines of heads=0.3 mm; others=0.05 mm.

7 ♀♀, 6 ♂♂. NEW IRELAND: Kavieng, 11.X.1959, W. Peters, 2 ♀♀, 3 ♂♂;

212. *Psychoda pingicula* Quate and Quate, new species Fig. 87d-h.

♀. Eyes separated by about 1/2 facet diameter, interocular suture absent; vertex small, narrower on midline than width of eye bridge; frons with median band extending posteriorly nearly to upper margin of bridge; ratio of palpal segments=25:24:22:35; labellum with 4 teeth and 2 spines, teeth more widely spaced than usual. Antenna 15-segmented; node of 1st flagellar segment larger than following and internode shorter than following; terminal 2 segments partly fused to each other and 13, 15 a little smaller than 14; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with straight, sloping convergent sides and deep apical concavity; genital digit extends beyond margin, densely setose lobe at base of digit; spermatheca elongate; crenulate over most of surface.

Antenna=0.86 mm (0.66-0.92), wing length=1.61 mm (1.35-1.87), width=0.64 mm (0.50-0.75).

♂. Similar to ♀. Genitalia as figured; dististyle rather slender, elongate, slightly enlarged distally; aedeagus simple, long blade-like with rounded apex; paramere large and bilobed; surstyle long and slender.

Antenna=0.81-0.98 mm, wing length=1.33 mm (1.10-1.57), width=0.57 mm (0.42-0.70).

Holotype ♀, allotype ♂ (BISHOP 7362): NW New Guinea, Sibil Val., 18.X-8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 11 ♀♀, 7 ♂♂, same data as types; 8 ♂♂, Vogelkop, Kebar Val., 4-31.I.1961, L. & S. Quate; 6 ♀♀, 7 ♂♂, Bokondini, 5-11.XI.1961, L. & S. Quate; 9 ♀♀, Swart Val., Karubaka, 12.XI.1958, J.L. Gressitt; 1 ♀, 1 ♂, Archbold L., 26.XI-3.XII.1961, L. & S. Quate. NE NEW GUINEA: 2 ♂♂, Wau, 31.III.1965, W.A. Steffan; 3 ♂♂, Wau, 17.XII.1961, L. & S. Quate; 6 ♀♀, 1 ♂, E slopes of Mt Wilhelm, Pengagl camp, 8.IX.1959, 6th Archb. Exped; 1 ♂, Wampit Val., near Gurakor, 7.VII.1957, D.E. Hardy; 62 ♀♀, 4 ♂♂, NE slopes of Mt. Michael, Kimi Creek camp, 27.VIII.1959, 6th Archb. Exped; 32 ♀♀, Okapa area, Purosa camp, 29.IX.1959, 6th Archb. Exped; 1 ♀, Kratke Mts., Arau, 10.X.1959, 6th Archb. Exped; 1 ♀, Mt.Otto, 24.VI.1955, Gressitt; 5 ♀♀, above Kabebe, 24.VI.1955, Gressitt; 1 ♀, Upper Jimmi Val., Korop, 12.VII.1955, Gressitt; 5 ♂♂, Lae, 10.VII.1957, Hardy; 1 ♂, Adelbert Mts, Wanuma, 23.X.1958, Gressitt. PAPUA: 1 ♀, Murua, 17-22.XII.1964, Steffan.

A broad subgenital plate with straight, convergent sides and the configuration on the inner face makes the female of *pingicula* rather easily distinguished from related species; the long aedeagus and bilobed paramere is most distinctive of *pingicula* and not likely to be confused with that of other species.

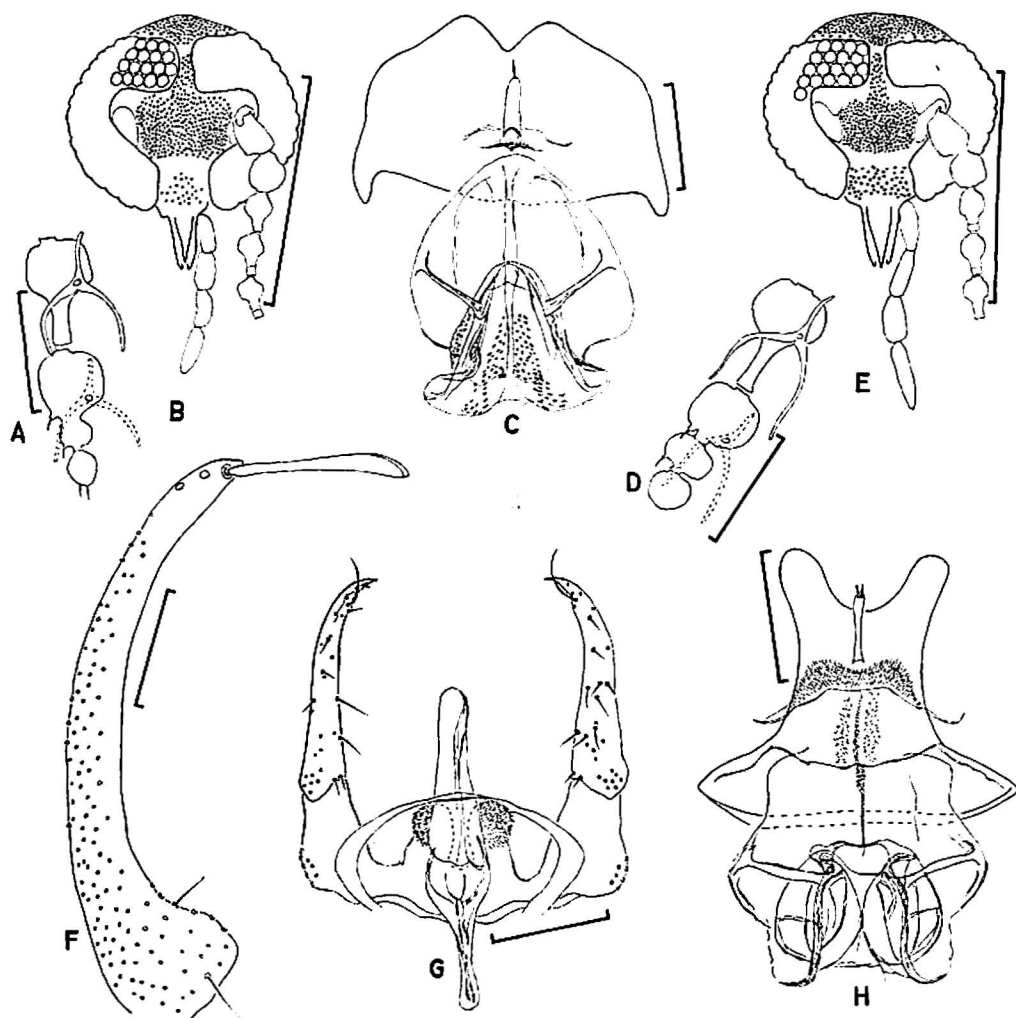
213. *Psychoda annectans* Quate and Quate, new species Fig. 88a-c.

♀. Eyes separated by 1 or less facet diameter, interocular suture absent; vertex small, much narrower than width of eye bridge; frons with median band of hairs extending posteriorly only to 3rd row of facets; ratio of palpal segments=20:20:20:25; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment little larger than following; terminal 2 segments smaller than usual, partly fused together and to 13 but variable, 15 a little smaller than 14; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with sides parallel basally and convergent distally, genital digit long and slender, usually extending beyond border; spermatheca elongate, with conspicuous spines or setae on mesal surfaces.

Antenna=0.70 mm (0.58-0.88), wing length=1.30 mm (1.05-1.75), width=0.53 mm (0.42-0.70).

♂. Unknown.

Holotype ♀ (BISHOP 7363): NW New Guinea, Vogelkop, Kebar Val, 4-31.I.1962, Malaise



trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 55 ♀♀, same data

Fig. 88. a-c, *Psychoda annectans*, ♀: a, antenna tip; b, head; c, genitalia. d-h, *Psychoda lamina*: d, ♀ antenna tip; e, ♀ head; f, ♂ surstyle; g, ♂ genitalia, dorsal; h, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

as type; 2 ♀♀, Manokwari, 21.VII.1957, D.E. Hardy; 20 ♀♀, Bokondini, 5-11.XI.1961, L. & S. Quate; 2 ♀♀, Archbold L., 26.XI-3.XII.1961, L. & S. Quate; 6 ♀♀, Mulik R., 10 km W of Archbold L., 3-5.XII.1961, L. & S. Quate; 7 ♀♀, Sibil Val., 18.X-8.XI.1961, L. & S. Quate. NE New Guinea: 1 ♀, Wau, 31.III.1965, W.A. Steffan; 2 ♀♀, Wau, 17.XII.1961, L. & S. Quate; 3 ♀♀, Lae, 6.VII.1957, Hardy; 2 ♀♀, 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped; 2 ♀♀, E slopes of Mt. Wilhelm, Pengagl camp, 10.IX.1959, 6th Archb. Exped; 6 ♀♀, NE slopes of Mt Michael, Kimi Creek camp, 27.VIII.1959, 6th Archb. Exped; 8 ♀♀, Markham Val., Umi Riv., 23.XI.1959, 6th Archb. Exped.

The female of this species resembles *pinguicula*, but differs in the differently shaped subgenital

plate (compare figures) and by possessing spines on the spermathecae, which are lacking in *pinguicula*. It also looks very much like the female of *umbratica* from the Philippines (Quate 1965), but differs in lacking the diagonal grooves on the plate below the spermathecae and also in the possession of setose spermathecae unlike those of *umbratica*. Unfortunately, the males of *annectans* are unknown and comparison of this sex cannot be made with those of the species which seem very closely related in the female sex.

214. ***Psychoda erratilis*** Quate and Quate, new species Fig. 89i-m.

♀. Eyes separated by 1.5–2 facet diameters, interocular suture absent; vertex on midline a little shorter than width of eye bridge; frons with wide median band extending posteriorly to 3rd row of facets; ratio of palpal segments=25:25:28(25):41; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment larger than following and internode shorter; terminal 2 segments separated, subequal in size; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate elongate and ending in 2 moderately slender lobes which are separated by deep apical concavity, genital digit rather short but extends beyond border, at center of inner face a bilobed, setose, transverse flap, on midline before flap, a darkened conical area; spermatheca with longitudinal bars very strongly developed.

Antenna=0.70–0.79 mm, wing length=1.39 mm (1.17–1.67), width=0.50 mm (0.42–0.62).

♂. Similar to ♀; eyes separated by about 1 facet diameter. Genitalia as figured; dististyle tapering to acute apex and with distinct curvature at about distal 1/4; aedeagus simple, straight and tubular; paramere consisting of pair of setose lobes, lobes longer than wide; surstyle larger than usual in *Psychoda*.

Antenna=0.82–0.87 mm, wing length=1.00–1.45 mm, width=0.42–0.52 mm.

Holotype ♀, allotype ♂ (BISHOP 7364): NW New Guinea, Bokondini, 1300 m, 5–11.XI.1961, light trap, L. & S. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 10 ♀♀, 4 ♂♂, same data as types; 8 ♀♀, 4 ♂♂, Vogelkop, Kebar Val., 550 m, 4–31.I.1962, L. & S. Quate; 1 ♂, 1 ♀, Swart Val., Karubaka, 1450 m, 12.XI.1958, Gressitt; 3 ♀♀, Archbold L., 760 m, 26.XI–3.XII.1961, L. & S. Quate. NE New Guinea: 1 ♀, 1 ♂, Markham Val., Umi Riv, 480 m, 21.XI.1959, 6th Archb. Exped; 1 ♂, Wau, 1.IV.1965, Steffan.

215. ***Psychoda lamina*** Quate and Quate, new species Fig. 88d-h.

♀. Eyes separated by about 1 facet diameter, interocular suture absent; vertex on midline narrower than width of eye bridge; frons with wide median band extending to upper row of facets; ratio of palpal segments=25:25:25:35; labellum with 4 teeth and 2 setae. Antenna 15-segmented; node of 1st flagellar segment a little larger than following and internode a little shorter; terminal 2 segments subequal in size and separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate elongate, rectangular with rather slender apical lobes and deep apical concavity, genital digit extends beyond border, at about center a bilobed, setose, transverse flap, on midline before flap a rectangular, setose area; spermatheca circular and longitudinal bar not unusually well developed.

Antenna=0.72–(0.95) mm, wing length=1.30–1.75 mm, width=0.47–0.67 mm.

♂. Similar to ♀; eyes separated by about 2/3 facet diameter. Genitalia as figured; dististyle tapering to slender apex and curved at about distal 1/4; aedeagus simple, straight; paramere consists of pair of setose lobes, each lobe shorter than wide; surstyle of about usual *Psychoda* shape.

Antenna=0.83–0.96 mm, wing length=1.32–1.62 mm, width=0.52–0.62 mm.

Holotype ♀, allotype ♂ (BISHOP 7365): NW New Guinea, Sibil Val., 1245 m, 18.X–8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, AMNH): 1 ♂, 1 ♀, same data as types;

6 ♀♀, 1 ♂, NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27.VIII-2.IX.1959, 6th Archb. Exped; 2 ♀♀, Mt. Otto, 2200 m, 23.VI.1955, Gressitt; 1 ♂, S slopes of Mt. Otto, 2200 m, 15.VIII.1959, 6th Archb. Exped; 1 ♂, Nondugl, 1600 m, 8.VII.1955, Gressitt; 1 ♂, Adelbert Mts, Wanuma, 1000 m, 23.X.1958, Gressitt.

The above two species, *erratis* and *lamina* are similar. They differ only in that the eyes of *erratis* are more widely separated and in a few details of the genitalia as indicated in the key. These species are allopatric in distribution with *erratis* to the west of the Star Mts. and *lamina* in the Star Mts. and to the east. It is possible that these forms are subspecies of a single species. However, we prefer to treat them as full species until additional studies can shed further light on their relationships.

216. ***Psychoda pellucida*** Quate, 1962, Pac. Ins. 4: 230; 1965, *ibid*, 7: 899.

DISTRIBUTION. Taiwan, Philippines, Borneo, Malaya, New Guinea.

NW NEW GUINEA. Vogelkop, Manokwari, 21.VII.1957, light trap, D.E. Hardy, 6 ♀♀.

217. ***Psychoda pacilens*** Quate and Quate, new species Fig. 89a-c.

♀. Eyes separated by 1 facet diameter, interocular suture sometimes present; vertex narrower on midline than width of eye bridge; frons with median band of hair extending posteriorly to upper row of facets or to suture; palpus long, extending to antennal segment 7; ratio of segments=24:25:25:35; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment scarcely larger than following; terminal 2 segments equal sized and well separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate elongate, sides concave, genital digit not extending beyond apical border, truncated, cone-shaped structure in front of digit, pair of ovoid, densely striate structures at base of cone; spermatheca with longitudinal bars prominent.

Antenna=0.70 mm (0.65-0.78), wing length=1.24 mm (1.10-1.42), width=0.47 mm (0.42-0.52).

♂. Unknown.

Holotype ♀ (BISHOP 7366): NW New Guinea, Bokondini, 300 m, 5-11.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 13 ♀♀, same data as type; 5 ♀♀, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, S. & L. Quate; 3 ♀♀, Vogelkop Kebar Val., 4-31.I.1962, S. & L. Quate; 2 ♀♀, Archbold L., 26.XI-3.XII.1961, L. & S. Quate. NE New Guinea: 3 ♀♀, Kratke Mts, Arau, 1400 m, 7-23.X.1959, 6th Archb. Exped; 4 ♀♀, Wau, 2.IV.1965, Steffan; 4 ♀♀, Adelbert Mts, Wanuma, 23.X.1958, Gressitt.

This species resembles *lamina* and *erratis*, but the structures on the inner face of the female subgenital plate of *pacilens* is quite different than in those two species. In *pacilens* the inner face is marked by the truncated, cone-shaped structure before the genital digit and lacks the bilobed flap-like structure which is present on the subgenital plate of *lamina* and *erratis*.

218. ***Psychoda sphelata*** Quate and Quate, new species Fig. 89d-h.

♀. Eyes separated by 1.5 facet diameters, interocular suture absent; vertex little narrower on midline than width of eye bridge; frons with wide median band extending posteriorly to 3rd row of facets; ratio of palpal segments=18:17(18):18:25; labellum small, apparently with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment little larger than following; terminal 2 segments well separated, 15 little smaller than 14; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with parallel sides over distal part and deep apical concavity, genital digit extends beyond apical border, concave, setose area in

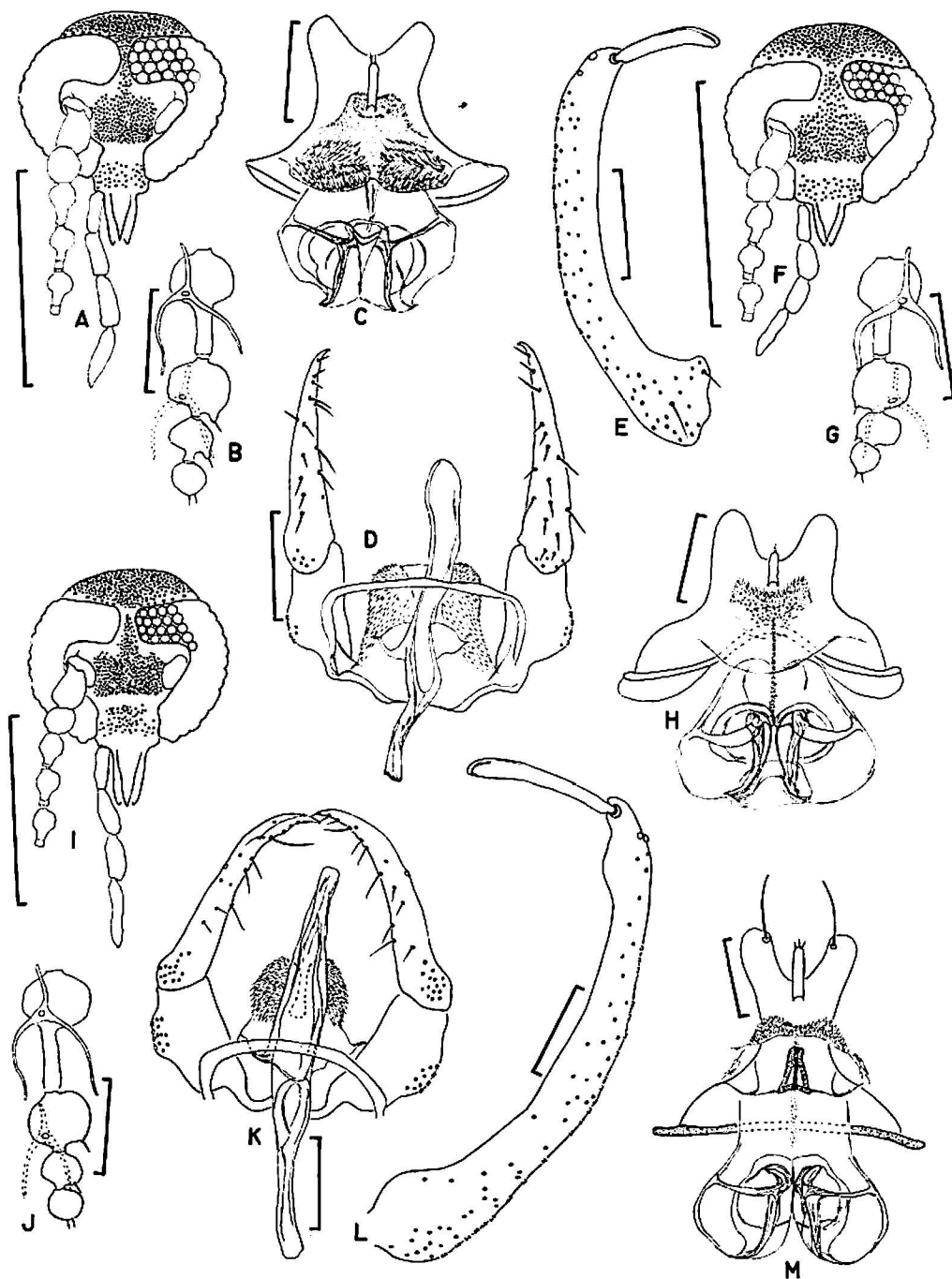


Fig. 89. a-c, *Psychoda pacilens*, ♀: a, head; b, antenna tip; c, genitalia. d-h, *Psychoda spheolata*: d, ♂ genitalia, dorsal; e, ♂ surstyle; f, ♀ head; g, ♂ antenna tip; h, ♀ genitalia. i-m, *Psychoda erratilis*: i, ♀ head; j, ♂ antenna tip; k, ♂ genitalia, dorsal; l, ♂ surstyle; m, ♀ genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

front of digit, basal margin of plate strongly concave in center; spermatheca circular, dark, longitudinal bars long.

Antenna=0.60-0.67 mm, wing length=1.19 mm (1.07-1.27), width=0.44 mm (0.40-0.47).

♂. Similar to ♀; eyes separated by 1.5-2 facet diameters. Genitalia as figured; dististyle tapering to acute apex and scarcely curved apically; paramere quadrate, with band of setae on each side; aedeagus simple, slightly curved before apex, without lateral shaft; surstyle of usual *Psychoda* shape.

Antenna=0.66-0.71 mm, wing length=0.97-1.15 mm, width=0.37-0.45 mm.

Holotype ♀, allotype ♂ (BISHOP 7367): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31. I.1962, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 13 ♀♀, 5 ♂♂, same data as types.

219. ***Psychoda blandita*** Quate and Quate, new species Fig. 90a-c.

♀. Eyes separated by 1-1.5 facet diameters, interocular suture absent; vertex on midline narrower than width of eye bridge; frons with triangular median band extending posteriorly to upper row of facets; ratio of palpal segments=20(23):23:23:24; labellum with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment scarcely larger than following; terminal 2 segments well separated, 15 clearly smaller than 14. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate heart-shaped, genital digit long and extends beyond apical border, at base of cordate apex a crenulate or striate area on each side; spermatheca hemispherical, longitudinal bar long.

Antenna=0.69 mm (0.61-0.76), wing length=1.23 mm (1.07-1.42), width=0.44 mm (0.37-0.52).

♂. Unknown.

Holotype ♀ (BISHOP 7368): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 20 ♀♀, same data as type; 12 ♀♀, Okapa area, Purosa Camp, 1950 m, 23-30.IX.1959, 6th Archb. Exped.

220. ***Psychoda parsivena*** Quate, 1959, Ins. Micronesia (BISHOP Mus.) 12(4): 439; 1962, Pac.

Ins. 4: 72; 1965, *ibid*, 7: 900. Fig. 90d-g.

DISTRIBUTION. Philippines, Borneo, Caroline Is, New Guinea.

NW NEW GUINEA: Manokwari, 22.VII.1957, D.E. Hardy, 3 ♀♀; Vogelkop, Kebar Val., 4-31.I.1962, L. & S. Quate, 28 ♀♀, 10 ♂♂; Archbold L., 26.XI-3.XII.1961, L. & S. Quate, 1 ♀; Hollandia, 17.XII.1961, L. & S. Quate, 1 ♀; Hollandia, 24.XI.1958, Gressitt, 1 ♂; Waris, 1-7.VIII.1959, Maa, 1 ♀. NE NEW GUINEA: Sepik Distr., Dreikikir, 23.VI.1961, Gressitt, 1 ♀; Lae, 10.VII.1957, Hardy, 24 ♂♂; Wau, 17.XII.1961, L. & S. Quate, 30 ♀♀, 3 ♂♂; 37 km W of Lae, Lae-Bulolo Rd, 28.IV.1959, 6th Archb. Exped, 4 ♀♀, 2 ♂♂; Wampit Riv. Val., 75 km from Lae, 6.V.1959, 6th Archb. Exped, 3 ♀♀; Wampit Val., near Gurakor, 7.VIII.1957, Hardy, 1 ♂; Kratke Mts., Arau, 10.X.1959, 6th Archb. Exped, 1 ♀; Kratke Mts., Kassam, 12.XI.1959, 6th Archb. Exped, 3 ♀♀; Markham Val., Umi Riv., 18-23.XI.1959, 6th Archb. Exped, 12 ♀♀, 2 ♂♂; Adelbert Mts., Wanuma, 23.X.1958, Gressitt, 1 ♀. PAPUA: Murua, 17-22.XII.1964, W.A. Steffan, 3 ♀♀, 1 ♂.

NEW BRITAIN. Keravat, 26.VII.1960, L. Smee, 14 ♀♀, 3 ♂♂; Vundabaken, 10 km E of Keravat, 16-20.XI.1959, Maa, 6 ♀♀; Gazelle Pen, 4.V.1956, Gressitt, 1 ♀.

NEW IRELAND. Kavieng, 3.VI.1959, W. Peters, 6 ♀♀, 5 ♂♂.

The female genitalia, particularly the granulose lobes on the inner face, and the male genitalia, especially the rather short and stocky dististyle and quadrate paramere, are distinctive of *parsivena*.

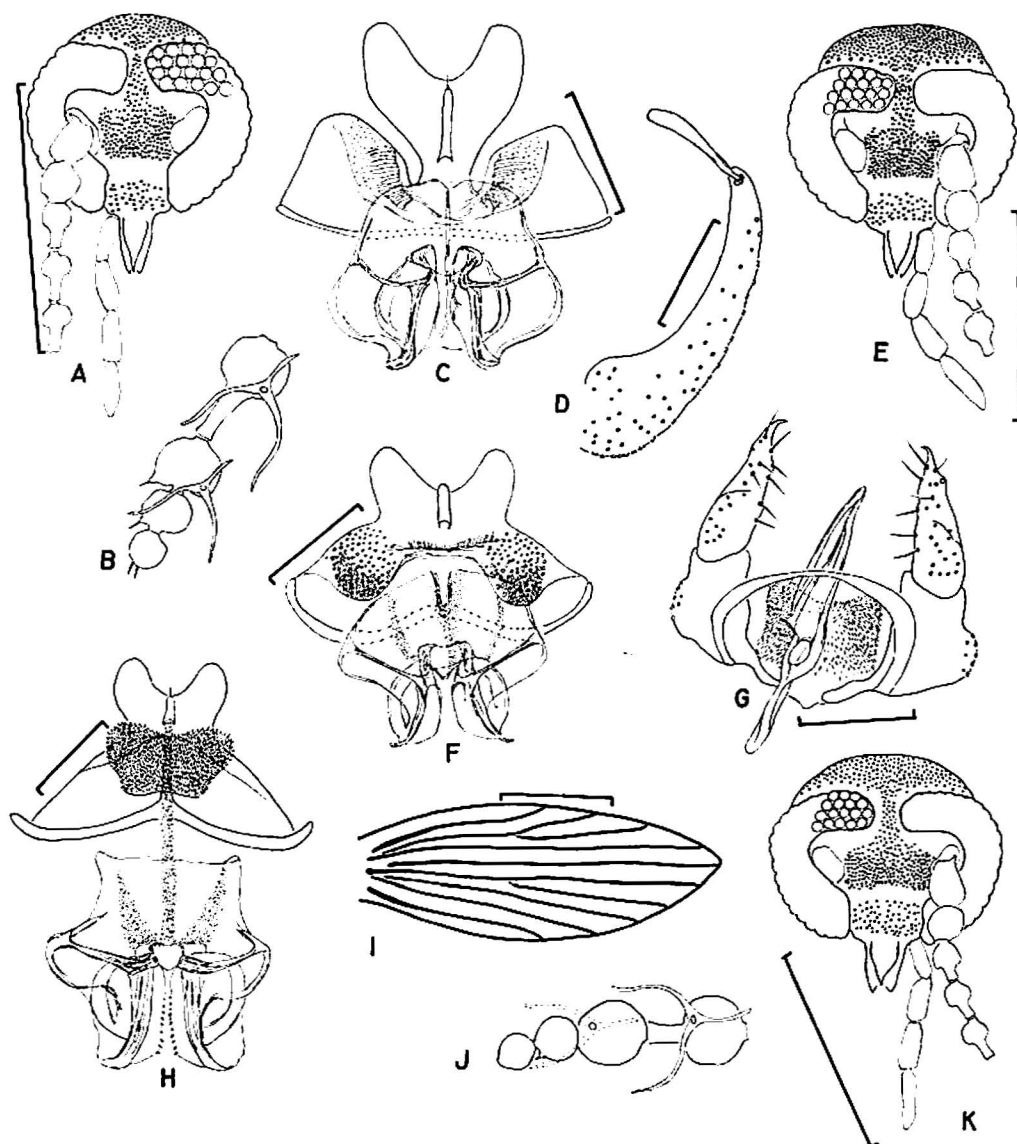


Fig. 90. a-c, *Psychoda blandita*, ♀: a, head; b, antenna tip; c, genitalia. d-g, *Psychoda parsivena*: d, ♂ surstyle; e, ♀ head; f, ♀ genitalia; g, ♂ genitalia, dorsal. h-k, *Psychoda bojata*, ♀: h, genitalia; i, wing; j, antenna tip; k, head. Scale lines of heads & wing = 0.3 mm; others = 0.05 mm.

and permit the ready identification of this widespread Pacific species. New illustrations of the genitalia are provided to facilitate identification.

221. ***Psychoda bojata*** Quate and Quate, new species

Fig. 90h-k.

♀. Eyes widely separated by 2.5 facet diameters, interocular suture absent; vertex higher than width of eye bridge; frons with wide median band extending posteriorly to 3rd row of facets; ratio of palpal segments = 20:22:22:27; labellum small, apparently with 4 teeth and 2 spines. An-

tenna 15-segmented; node of 1st flagellar segment little larger than following and internode shorter; terminal 2 segments separated, 14 a little smaller than 15; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with rounded apical lobes, margins before lobes faint and indistinct, a setose, plaque-like structure on inner face before digit gives subgenital plate unusual and distinctive appearance; spermatheca hemispherical, with faint spines on mesal margin, ventral plate large and sclerotized, 3 bars extending caudad from spermatheca especially prominent.

Antenna=0.68 mm, wing length=1.20 mm, width=0.37 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7369): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, S. & L. Quate.

222. ***Psychoda barbiger*** Quate and Quate, new species Fig. 91a-c.

♀. Eyes widely separated by 2 facet diameters, interocular suture absent; vertex on midline little higher than width of eye bridge; frons with wide median band extending posteriorly to upper row of facets; ratio of palpal segments=20:20:20:28; labellum apparently with 4 teeth and 2 spines. Antenna 15-segmented; node of 1st flagellar segment no larger than following; ascoids small, Y-shaped. Wing slender, forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate Y-shaped with broad apical lobes, genital digit extends from truncated lobe and extends well beyond apical border, numerous spatulate hairs on small basal section of plate; spermatheca circular, with number of dark, short, spines on mesal surfaces.

Antenna=0.59-0.62 mm, wing length=1.05-1.12 mm, width=0.37-0.40.

♂. Unknown.

Holotype ♀ (BISHOP 7370): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, Malaise trap, S. & L. Quate. Paratypes (BISHOP, USNM): 3 ♀♀, same data as type.

223. ***Psychoda alabangensis*** del Rosario, 1936, Philip. J. Sci. 59: 566.-Quate, 1962, Pac. Ins. 4: 72; 1962, Proc. Haw. Ent. Soc. 18: 184; 1965, Pac. Ins. 7: 901.

Psychoda ichthyocerca Quate, 1959, Ins. Micronesia (Bishop Mus.) 12(4): 472 (♀).

DISTRIBUTION. India, Borneo, Philippines, Caroline Is, Mariana Is, New Guinea, Trinidad.

SW NEW GUINEA: Vogelkop, Fak Fak, I.VI.1959, T.C. Maa, 1 ♀. NE NEW GUINEA, Wampit Riv. Val., 75 km from Lae, 670 m, 6.V.1959, 6th Archb. Exped, 1 ♂.

The fishtail-shaped female subgenital plate and the dark spots in the spermatheca, the simple male aedeagus with the sinuous dorsal ridge, in combination with the 15-segmented antennae, the incomplete wing forks and the small size provide a reliable group of characters for the recognition of *alabangensis*.

224. ***Psychoda gracicaulis*** Quate and Quate, new species Fig. 91d-f.

♀. Eyes widely separated by 2-3 facet diameters, interocular suture absent; vertex on midline higher than width of eye bridge; frons with very wide median band extending posteriorly to upper row of facets; ratio of palpal segments=20:20:20:28; labellum with 4 teeth and only a single spine. Antenna 15-segmented; node of 1st flagellar segment scarcely larger than following; terminal 2 segments separated; 15 a little smaller than 14; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as illustrated; subgenital plate fishtail-shaped, genital digit originating near base of plate and very long but not extending beyond apical border, near distal 1/3 of digit a transverse, bilobed, setose flap; spermatheca circular and sclerotized, longitudinal bar long and heavy.

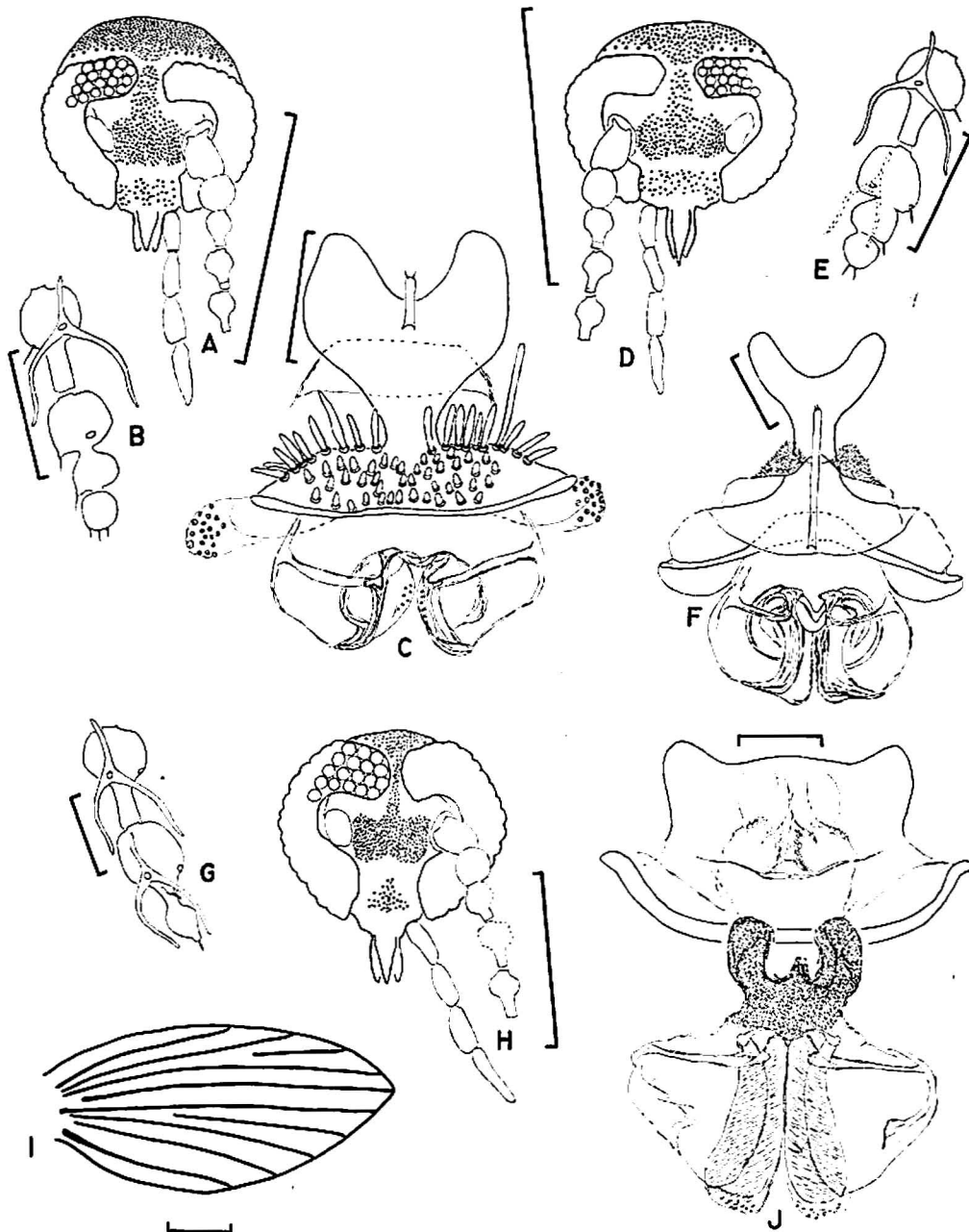


Fig. 91. a-c, *Psychoda barbiger*, ♀: a, head; b, antenna tip; c, genitalia. d-f, *Psychoda gracicaulis*, ♀: d, head; e, antenna tip; f, genitalia. g-j, *Psychoda spectabilis*, ♀: g, antenna tip; h, head; i, wing; j, genitalia. Scale lines of heads & wing=0.3 mm; others=0.05 mm.

Antenna=0.62-0.72 mm, wing length=1.15-1.50 mm, width=0.40-0.52 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7371): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, Malaise trap, S. & L. Quate. Paratypes (BISHOP, AMNH): 1 ♀, same data as type; 2 ♀♀, NE New Guinea, NE slopes of Mt. Michael, Kimi Creek camp, 1980 m, 27.VIII.1959, 6th Archb. Exped.

The female genitalia and other characters are similar to *alabangensis* but *gracicaulis* is easily separated from that species by the transverse flap across the center of the subgenital plate.

225. ***Psychoda spectabilis*** Quate and Quate, new species Fig. 91g-j.

♀. Eyes separated by about 1 facet diameter; vertex small, much narrower on midline than width of eye bridge; frons with median band of hairs extending posteriorly to upper row of facets; ratio of palpal segments=35:34:35:50; labellum with 4 teeth and 2 spines. Antenna 14-segmented; node of 1st flagellar segment no larger than following; terminal segment small but separated, pyriform; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate unusual in not being bilobed apically, but rather weakly trilobed and much broader than long; spermatheca elongate, much longer than wide, covered with fine setae.

Antenna=0.95-1.02 mm, wing length=1.77-1.95 mm, width=0.75-0.80 mm.

♂. Unknown.

Holotype ♀ (BISHOP 7372): NW New Guinea, Mulik R., 10 km W of Archbold L., 1050 m, 3-5.XII.1961, light trap, S. & L. Quate. Paratypes (BISHOP, AMNH): 2 ♀♀, same data as type; 1 ♀, Archbold L., 760 m, 26.XI-3.XII.1961, L. & S. Quate; 2 ♀♀, NE New Guinea, NE slopes of Mt Michael, Kimi Creek camp, 1980 m, 29.VIII.1959, 6th Archb. Exped; 1 ♀, Okapa area, Purosa camp, 26.IX.1959, 6th Archb. Exped.

This is a distinctive and unusual species which is immediately recognizable by the broad, weakly trilobed subgenital plate and the elongate, setose spermathecae of the female. We are aware of no other species with which *spectabilis* might be confused and to which it may be related.

226. ***Psychoda exigua*** Quate and Quate, new species Fig. 92a-e.

A small species with 14-segmented antennae.

♀. Eyes widely separated by 1.5-2 facet diameters, interocular suture absent; vertex small, much narrower on midline than width of eye bridge; frons with wide median band extending posteriorly to upper row of facets; ratio of palpal segments=17:17:17:23; labellum with 4 teeth and 2 spines. Antenna 14-segmented; node of 1st flagellar segment a little larger than following; terminal segment clearly separated from preterminal; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; apical part of subgenital plate beyond wide base Y-shaped with thick stem, digit extends well beyond apical border, bilobed, membranous flap at base of digit; spermatheca elongate, ventral plate broad and lateral margin sclerotized.

Antenna=0.52-0.60 mm, wing length=0.97 mm (0.87-1.05), width=0.35 mm (0.32-0.40).

♂. Similar to ♀; eyes separated by 1 facet diameter. Genitalia as figured; dististyle evenly tapering to sharp, beak-like apex, with long accessory seta near center; aedeagus with main shaft broad at center and tapering to acute apex, lateral shaft curved, shorter and narrower than main shaft; surstyle long and slender.

Antenna=0.60-0.65 mm, wing length=0.85 mm (0.77-0.91), width=0.32 mm (0.30-0.34).

Holotype ♀, allotype ♂ (BISHOP 7371): NW New Guinea, Vogelkop, Kebar Val., 550 m, 4-31.I.1962, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 11 ♀♀, 13 ♂♂, same data as types; 1 ♀, Sibil Val., 18.X-8.XI.1961, L. & S. Quate.

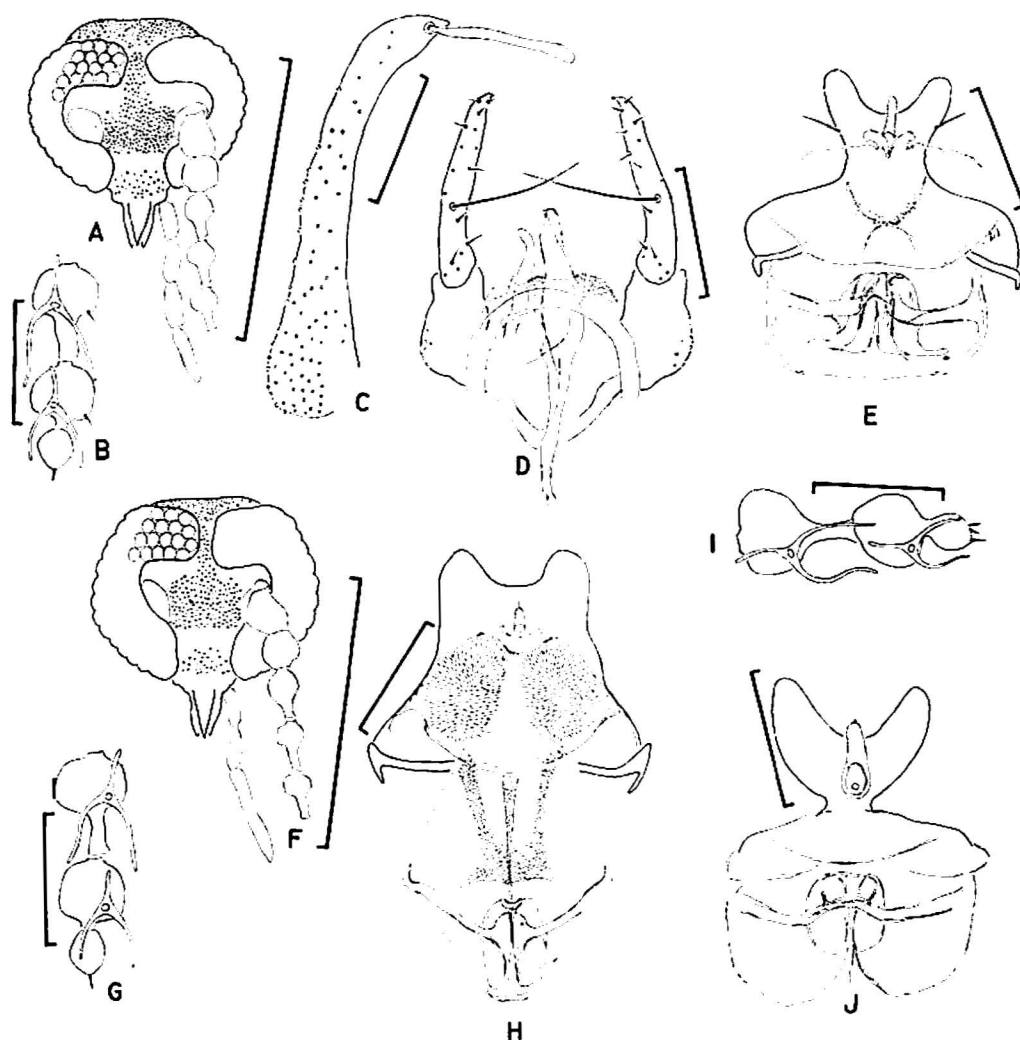


Fig. 92. a-e, *Psychoda exigua*: a, ♀ head; b, ♀ antenna tip; c, ♂ surstyle; d, ♂ genitalia, dorsal; e, ♀ genitalia. f-h, *Psychoda exilis*, ♀: f, head; g, antenna tip; h, genitalia. i-j, *Psychoda debilis*, ♀: i, antenna tip; j, genitalia. Scale lines of heads=0.3 mm; others=0.05 mm.

227. ***Psychoda debilis*** Quate and Quate, new species

Fig. 92i-j.

♀. Eyes separated by about 1 facet diameter; vertex small, narrower on midline than width of eye bridge; frons with median band of hairs extending posteriorly to 3rd row of facets; ratio of palpal segments=20:20:20:25; labellum with 4 teeth and 2 spines. Antenna 14-segmented; node of 1st flagellar segment no larger than following; terminal segment separated; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate an arcuate piece resting on a small base; spermatheca small.

Antenna=0.57-0.65 mm, wing length=1.05-1.22 mm, width=0.35-0.47 mm.

♂. Unknown.

Holotype ♀ (AMNH): NE New Guinea, Okapa area, Purosa camp, 1950 m, 23.XI.1959, L.J. Brass, 6th Archb. Exped. Paratypes (AMNH, BISHOP): 6 ♀♀, same data as type.

228. *Psychoda exilis* Quate and Quate, new species. Fig. 92f-h.

♀. Eyes separated by about 1 facet diameter; interocular suture absent; vertex small, on midline narrower than width of eye bridge; frons with slender, median band of hairs extending posteriorly to hairs on vertex; ratio of palpal segments=20:20:20:24; labellum with 4 teeth and 2 spines. Antenna 14-segmented; node of 1st flagellar segment scarcely larger than following; terminal segment clearly separated from preterminal; ascoids Y-shaped. Wing forks incomplete. Fore femur longer than tibia. Genitalia as figured; subgenital plate with sloping, convergent sides, inner face with semi-circular, setose area, genital digit short and apparently does not extend beyond apical border; spermatheca elongate and small.

Antenna=0.62-0.74 mm, wing length=1.23 mm(1.07-1.32), width=0.48 mm (0.42-0.52).

♂. Unknown.

Holotype ♀ (BISHOP 7374): NW New Guinea, Sibil Val., 1245 m, 18.X-8.XI.1961, light trap, S. & L. Quate. Paratypes (BISHOP, USNM, AMNH, BMNH, CSIRO): 4 ♀♀, same data as type; 2 ♀♀, Archbold L, 26.XI-3.XII.1961, L. & S. Quate; 13 ♀♀, NE New Guinea, Okapa area, Purosa camp, 26.IX.1959, 6th Archb. Exped; 1 ♀, NE slopes of Mt. Michael, Kimi Creek camp, 27.VIII.1959, 6th Archb. Exped; 1 ♀, Kratke Mts, Arau, 21.X.1959, 6th Archb. Exped.

ZOOGEOGRAPHY

The Papuan subregion is rich in psychodid species and genera. It appears to be richer than any other comparable tropical region and temperate areas of much larger size. For the tropics, however, this perhaps is only a result of more extensive field work and when other areas, especially the New World tropics, are equally well worked, Papuan psychodids may not be so disproportionately numerous as they are now. Nonetheless, Papua has certainly been an area with a relative high rate of speciation in the Psychodidae.

The Papuan psychodid fauna is a continental one. All the major genera are present, including those which are unable to cross major water barriers. In contrast to oceanic faunas, as Micronesia (Table 1) and Hawaii, Papuan psychodids are indeed well represented. Almost all higher taxa found on neighboring Asia are present. The composition of the genera in New Guinea is not very different than the continental faunas of Borneo and the Philippines (Table 1).

DISTRIBUTION PATTERNS AND RELATIONSHIPS OF SUPRASPECIFIC CATEGORIES.

The distribution patterns of the supraspecific taxa may be categorized in one of four ways: 1) widespread; 2) Oriental-Papuan; 3) Australasian-Papuan; and 4) Papuan.

As in all parts of the world, the bulk of the Papuan psychodids fall into a few, large genera, namely *Telmatoscopus* and *Psychoda*. These genera are world-wide in range and dominant in all regions. Papuan *Telmatoscopus*, however, are readily placed into one of four subgenera, each of which has its own zoogeographic affinities discussed below.

Other genera which are world-wide (or nearly so), but considerably smaller than *Telmatoscopus* and *Psychoda*, are *Trichopsychoda*, *Philosepedon* and *Threticus*. These genera have achieved extensive ranges throughout the world, are allied to *Psychoda*, but have never speciated as extensively as that genus.

Two other genera, *Sycorax* and *Trichomyia*, are also nearly world-wide, but have few species. They are ancient genera, undoubtedly a great deal older than *Telmatoscopus*, *Psychoda* and its allies. A number of fossil *Trichomyia* are known and at one time this may have been the largest psychodid

Table 1. Composition of the New Guinea environs psychodid fauna.

	Philippines		Borneo		New Guinea		Australia		New Zeal.		Micronesia	
	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%	Spp.	%
TOTAL	132		86		230		58		43		39	
PHLEBOTOMINAE												
<i>Nemopalpus</i>	0		1	1	0		1	2	1	2	0	
<i>Phlebotomus</i>	25	19	10	12	18	8	6	10	0		0	
TRICHOMYIINAE												
<i>Sycorax</i>	1	0.8	0		2	1	1	2	4	9	0	
<i>Trichomyia</i>	4	3	6	7	5	2	1	2	1	2	2	5
PSYCHODINAE												
<i>Periconia</i>	0		0		3	1	11	19	16	37	0	
<i>Notiocharis</i>	3	3	3	3	9	4	2	3	0		0	
<i>Paratelmatoscopus</i>	3	3	3	3	4	2	2	3	0		0	
<i>Telmatoscopus</i>	23	17	15	17	62	27	15	26	0		5	13
<i>Gerobrunettia</i>	0		0		4	2	0		0		0	
<i>Brunettia</i>	10	8	3	3	18	8	1	2	1	2	6	15
<i>Atrichobrunettia</i>	0		0		10	4	2	3	0		0	
<i>Trichopsychoda</i>	2	1	2	2	4	2	1	2	0		2	5
<i>Epacreton</i>	1	0.8	0		3	1	0		0		0	
<i>Philosepedon</i>	9	7	6	7	7	3	0		0		1	3
<i>Threticus</i>	0		0		1	0.4	3	5	0		0	
Psychoda	51	39	38	44	80	35	13	22	20	45	23	59

genus, but now it is a rather minor element of the family. *Sycorax* is even smaller and less specialized than *Trichomyia*. Its species appear infrequently and it is unlikely that a great many *Sycorax* will ever be found, but future discoveries should prove important to the understanding of ancient distribution patterns in the family.

Phlebotomus and *Brunettia* are essentially Old World groups. While both occur in the New World, there is a sharp demarcation between the two faunas and it is correct to say that the New Guinea species of these genera are members of Old World groups, in contrast to the more widespread genera discussed above, which show no such subdivisions. Australian *Phlebotomus* seem to be an extension of the New Guinea stock, which has originated in Asia.

Notiocharis and *Paratelmatoscopus* are more restricted, but still widespread in being Oriental-Australasian genera. Their species are moderately abundant in the area from SE Asia to Australia.

Three of the subgenera of *Telmatoscopus*—*Nototelmatoscopus*, *Eutelmatoscopus*, and *Clogmia*—also adhere to this pattern. Some of these may also be found to occur in Africa (as indicated by the single species of *Notiocharis* in the Seychelles), but it seems unlikely that they are in the Palaearctic region. We do not know their areas of origin nor directions of geographical radiations.

The fourth subgenus of *Telmatoscopus*—*Rhadinoscopus*—is an Oriental-Papuan group occurring in the Philippines and Borneo (these species have not been assigned to subgenus in the existing literature), as well as New Guinea, but not extending into Australia. *Epacreton*, a small genus closely allied to *Psychoda*, has a similar range. These are the only higher categories which are limited to an Oriental-Papuan pattern.

Australophlebotomus and *Atrichobrunettia* are the Australasian-Papuan groups. They are distinct entities, well separated from their sister groups and quite possibly are older than the Oriental-Papuan groups.

Pericoma is a widely distributed genus with species especially numerous in the northern land masses. One section of the genus (which has not been recognized nomenclatorially) is restricted to the southern hemisphere and moderately—but probably significantly—distinct from its northern relatives (Satchell 1950; Quate 1961). The New Guinea species of *Pericoma* belong to this section and probably resulted from northern radiations of the Australasian forms.

Gerobrunettia is known only in New Guinea and it is tempting to conclude that it is endemic to the area. It is closely related to but apparently more primitive than *Brunettia* and possibly the progenitor of that genus and its allies. If *Gerobrunettia* is truly a Papuan endemic, then the origin of *Brunettia* probably was in the Papuan subregion. This would be the first time that origin of a psychodid group could be placed in a limited area, but until other Old World faunas are better known, this hypothesis cannot be strongly supported.

DISTRIBUTIONAL PATTERNS AND RELATIONSHIPS AT THE SPECIES LEVEL

As with higher categories, four types of distributional patterns are evident at the species level. A few species are widespread, some Papuan species occur also in Asia or Australia (or have closely related, "sister species," there), and many are endemic to New Guinea without clear affinities to non-Papuan species. Most of the species fall into the last category. An additional Papuan-Oceanic range is present at the species level.

The few cosmopolitan or tropicopolitan species probably owe their distribution to the ability to be transported by man. They must be vigorous species to withstand commercial transport and adaptable to a wide variety of environmental conditions to become established in new territories. *Telmatoscopus albipunctatus* and *Psychoda alternata* are the two best known examples, but some other species of *Psychoda* (*savaiiensis*, *platilobata*, *alabangensis*) are also widely distributed.

Tables 2-4 present the Asian and Australian relationships of the various species. In 14 instances an Asian affinity is indicated and in 6 an Australian. We are inclined to feel that this may not be the true picture, for much of the Asian relationship is shown by species of *Psychoda* and it is in *Psychoda* that we find species distributed in the three areas (Table 5). It is quite reasonable to expect that future collecting in Australia will reveal that some of the apparent Oriental-Papuan *Psychoda* species also are Australian and reduce the weight of evidence favoring an Asian affinity for Papuan psychodids.

In four instances, Papuan psychodids show affinities with Oceanic species. Whether they have originated in Papua and spread to the islands or vice versa is not clear. While it does show a relationship between Papua and Oceania, it doesn't indicate which has been the source area. The

Table 2. Psychodidae with species affinities in Asia.

Species	Cognate
<i>Trichomyia noctivolata</i>	{ ransangi, Philippines
<i>T. trivialis</i>	{ malaya, Malaya
<i>Notiocharis stellae</i>	
<i>N. maa</i>	stellae, Philippines, Borneo
<i>Telmatoscopus (Clogmia)</i>	
<i>T. colobrinus</i>	
<i>T. aurigeneus</i>	
<i>T. consentaneus</i>	clavicularis, Borneo

Table 3. Psychodidae with species affinities in Australia.

Species	Cognate
<i>Phlebotomus coronatus</i>	queenslandi
<i>P. englishi moresbyi</i>	e. englishi
<i>P. hoogstraali</i>	hoogstraali
<i>Notiocharis fragilis</i>	
<i>N. paxillosa</i>	dimorpha
<i>Paratelmatoscopus permistus</i>	
<i>P. nitidus</i>	{ variegatus
<i>P. impigrus</i>	{ subvariegatus
<i>P. similis</i>	
<i>Telmatoscopus (Clogmia) falcatus?</i>	poncianicolus

Table 4. Psychoda species occurring in New Guinea, Asia and/or Oceania.

crenula	alia	adumbrata*
kalabanica	vagabunda	mediocris*
serpentina	caudata	yapensis*
aderces	innotabilis	cetreta†
paraderces	pellucida	
*Oceania only, not Asia		†Sister species in Micronesia

Table 5. Psychoda species occurring in New Guinea, Asia, Oceania and Australia.

ochra	acanthostyla
harrisi	makati
aponesos	parsivena
quadrifilis complex	

affinity is not particularly strong and the Papuan psychodids do not seem much more closely related to Oceanic ones than do the Asian species.

CONCLUSION

We cannot state unequivocally that the Papuan psychodids are predominantly Asian or Australian in affinity. It appears that the relationships are rather equally divided and there is no greater affinity with one area than to another. Asian relationship is shown by a primitive genus, *Trichomyia*, and also by more advanced, *Notiocharis*, *Clogmia* and especially *Psychoda*. Another primitive group, *Phlebotomus*, shows Asian affinity as do more advanced groups, *Pericoma*, *Paratelmatoscopus*, *Notelmatoscopus*, and *Rhadinoscopus*. On the basis of our present knowledge, the zoogeographic relationships of the Psychodidae are clearly divided between Asia and Australia. The relationship of

Papuan to Oceanic psychodids seems to be a weak one and scarcely stronger than that of Asian and Oceanic faunas.

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New names are indicated by **bold face** type, synonyms by *italics*.

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